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Railway Age

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1

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2

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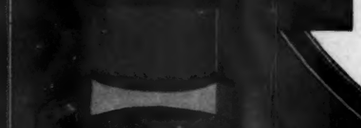

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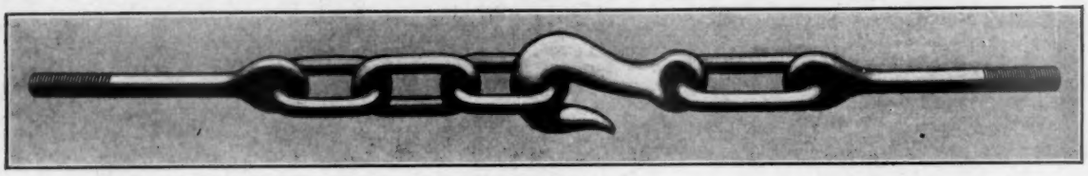

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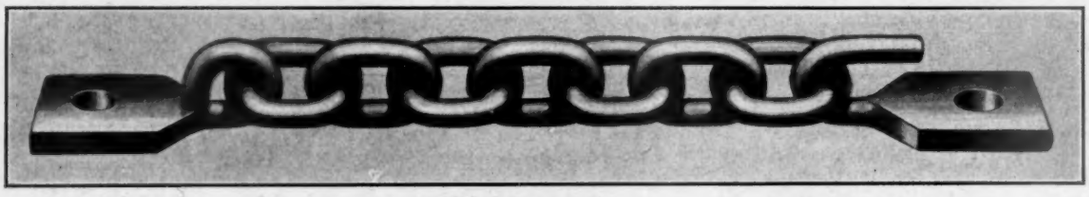

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EDITORIAL

Railway Age

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Telegraph-Signal Pole Lines

With the installation of automatic block signals in prospect on several roads the question whether a separate pole line should be installed to carry the line circuits deserves serious consideration. For alternating current signaling using approximately 4,400-volt feeding circuits a separate pole line is essential, but with low-voltage direct current circuits another cross-arm has simply been added to the existing telegraph lead in the majority of installations made in the past. Serious accidents are said to have been caused by crosses between telegraph and signal wires carried on the same pole line. Again, in case the pole lines are damaged by wind or sleet storms, considerable confusion and delay often result because of a lack of co-operation between employees maintaining the separate signal and telegraph lines. Also adding another cross-arm for signal wires to an already overloaded telegraph lead is poor economy, as has been found by some roads in the past. A study of these factors on several roads has resulted in the decision to build a separate pole line. The local conditions in each case should be carefully studied before determining the practice to be followed.

Electric Rivet Cutting

Cutting out rivets with the gas flame is a practice quite common in railroad shops. The practice of using the electric arc for this purpose is comparatively new. Numerous objections have been raised from time to time to the use of the electric arc for this purpose, but, one by one they have been disposed of and there are now several railroads using the process. Damage to the plate is offered as an objection but anyone who has watched the work has noticed that the arc sticks to the rivet after it is started and does not wander around on the plate as might be expected even though the rivet is burned completely out of the hole. Mechanical and inductive "kick" have been practically eliminated by improvements of welding equipment. Comparatively large amounts of power are, of course, required which in turn means heavy welding leads and bulky cutting electrodes. On the Chesapeake & Ohio the welding machine is connected to a bus to which are connected in turn a number of welding leads. The cutting electrode only is carried about and the dragging of heavy leads is eliminated. As yet no way has been found to cut down the size of the electrodes so they are difficult to use in confined spaces, but there is apparently a broad field to which this practice can be applied to advantage.

A Word for —and to— Purchasing Agents

Railroad purchasing agents have come in for considerable criticism from time to time on the ground that purchases are based on price rather than quality. During the past two years other industries than the railroads have been obliged to disregard ultimate costs in meeting their immediate necessities with the limited funds available. Not all manufacturers are agreed that railroads make price the sole factor governing the placing of orders. Apparently certain roads are greater offenders than others in this regard. In extreme cases it seems that everything is left to the purchasing agents who, if not technical men, know little about the tools, equipment or material purchased, except the price. Several manufacturers have expressed the opinion that the tendency to buy on price has been decreasing in the past few years and especially since the war. This has probably been brought about by the introduction of well-trained technical men into the purchasing departments, enabling more clear-cut, standard specifications to be drawn. In a specified case one manufacturer writes that "the purchasing methods of railroads have been changed considerably in the last few years, indicating that more modern, businesslike methods are being employed by some roads." However that may be, there is still room for improvement, especially in the purchase of shop machinery and labor-saving equipment. So few orders are placed for this equipment, compared to the enormous number of other orders, and the relative amounts of money involved are so small that there is perhaps a natural tendency for purchasing agents to consider shop equipment and tools relatively unimportant. They should not forget that money spent for shop machinery and equipment is in the nature of an investment rather than a routine expense. Considered in this light, a small saving in the first cost of a tool which may be used anywhere from 10 to 20 years is immaterial compared to its durability, convenience of operation and productive capacity.

French Railroads in 1921

The article by Marcel Peschaud regarding the conditions and results of operation of the French railways in the year 1921 shows that while these railways have not recovered from the effects of the war, they are recovering with remarkable rapidity. The five large lines which are operated by private companies had an aggregate operating deficit in 1921 which, at the present rate of exchange, amounted to about $38,000,000 in American money. Including fixed charges their deficit was about $160,000,000. These figures are, however, a great improvement over those of 1920, when the operating deficit was $130,000,000, and the total deficit $260,000,000. The reduction in the deficit was due both to advances in rates and reductions of operating expenses. In spite of these changes, however, expenses were still 430 per cent more than before the war, while earnings were only 193 per cent more. Each of the large private railways now has more locomotives and freight cars than before the war in 1913, the total increase in number of locomotives being 32 per cent and in freight cars 22 per cent. Freight business on the other hand, was less than in 1913. Nothing is said about the change in number of passenger cars since 1913, but passenger business was 12 per cent larger than in 1913, and those who have traveled recently in France know that passenger equipment is inadequate and trains generally are crowded. The number of employees was reduced nine per cent as compared with 1920, but was still 28 per cent larger than in 1913, "because," as M. Peschaud says, "the lines continued to suffer under the burdensome effects of the eight hour day without having been able to obtain, as they had hoped, a revision of the truly unreasonable conditions of its application." The American reader will, we believe, find M. Peschaud's article

very interesting because of the opportunity it gives both to compare and contrast the railway developments that have occurred in France and in the United States within recent years. Among other things the American reader probably will grasp the significance of M. Peschaud's statement that the deficit of the State Railway in 1921 was, in American money, about $67,500,000, or over one-half as large as the combined deficit of the five large private railways. The State Railway is not comparatively a large system, but like most government-managed railways it shows remarkable ability in producing deficits. There is much talk in France about the desirability of selling or leasing it to a private company for operation. This would work a hardship on the multitude of useless employees who would lose their jobs, but would give quite a substantial relief to the French taxpayer.

A Tribute to the Safety Movement

The results of the safety movement among the railways were emphasized in a striking manner at the recent triennial convention of the Brotherhood of Railroad Trainmen in Toronto, when this organization voted to increase the amount of insurance for members from $2,000 to $2,700 while retaining the same rate as heretofore. The amount of insurance was thus increased 35 per cent without any additional cost. No finer tribute could be paid to the safety movement than this action on the part of the employees themselves, evidencing as it does the decrease in the number of casualties to their members. The reasons for this decrease are evident; modern equipment embodying accident preventive features, better roadbeds, corps of efficient safety supervisors and instructors and a staff of employees, who are co-operating in putting the "safety" principles into effect. The distressing feature of the safety movement at the present time is the increase in the number of grade crossing accidents at the time when the number of casualties to employees is being reduced. Here the railways are facing a different problem, for instead of conducting an educational campaign among groups of employees under direct control, it is necessary to reach large numbers of scattered individuals. Furthermore it is difficult to penalize the public for its carelessness, although it is interesting to note that the Southern Pacific is suing careless drivers who crash into its trains or otherwise damage its property, while the Northern Pacific and other roads have installed train "checkers" at important grade crossings to detect those guilty of "chance taking," who later receive written advice regarding the importance of protecting their own lives.

Electric Heat in Railroad Shops

Electric heat cannot be used economically for general heating purposes, such as the heating of buildings, but in spite of this fact electric heating devices in various forms are finding a place in railroad shops. The term, "electric heating devices," is apt to suggest to the casual reader such things as toasters, flat irons, grills and percolators, but in industry it now applies to such apparatus as paint and varnish drying ovens, glue pots, soldering iron furnaces, sherardizing drums, core baking ovens for foundry work, ovens or furnaces for shrinking pits, ovens for drying and baking armature and field coils; melting pots for lead, tin and babbitt; air heaters for cabs; vats for impregnating woods; furnaces for annealing brass, steel and malleable iron parts; furnaces for heat treating steel forgings, for case hardening, for tempering tools, etc. Rivet heaters and electric welders may also be properly classified as electric heating devices. "Electric heating of houses would be a gross waste rather than a conservation of fuel resources and so prohibitive in cost to users as to be beyond all consideration." This statement was made in a report on electric cooking and heating by consulting engineer Wyer, an electrical expert. It is generally considered to be correct and can be used properly as a guide, but it does not mean that such devices as listed above cannot be used to effect large economies. In many cases fuel burning devices are less efficient than those utilizing electric heat. In other cases much can be saved because the material to be heated will not be oxidized in the electric furnace or because the electric heat can be controlled automatically and held within limits of a few degrees. Many new electric heating devices have been perfected and anyone who happens to be in a position to use such equipment may profit by studying their advantages.

Which Do Railway Employees Prefer?

MOST OF THE coal mines of the country have been shut down and most of their employees have been out of work for three months because the managements and employees have been unable to agree on any method for settling a controversy regarding wages. Recently the importation of non-union workers by the operators and wholesale murder by the strikers have been adopted as means of settlement in one part of southern Illinois.

There is a wage controversy going on between the railways and a large number of their employees. The situation in the railroad industry is different from that in the coal mining industry in one very important respect. The government has established for the railroad industry a board of arbitration—the Railroad Labor Board—for settling controversies which may arise regarding working conditions and wages.

The railway employees, as well as the railways and the public, are represented on this Board. In 1920 it awarded to the employees the largest advance in wages ever made in any industry in history. The railways accepted the award. A strike and prolonged and extensive unemployment were avoided. Since then the same Board has awarded reductions in wages which, if accepted by the employees, would leave most of them with about the same money wages, but with wages having larger purchasing power, as those they had before the large advance was granted in 1920. The existence of the Labor Board and the policy it has followed have resulted in railway employees being paid higher wages than those received by most men doing similar work in other industries. After the reductions awarded, which are to go into effect today (July 1), the employees affected will still, according to the findings of the Board, be paid higher wages than those of men doing similar work in other industries of the country.

If the employees peaceably accept the awards they will have steady employment at good wages, whether compared with those they have received in the past or with those received by other workers. If they strike, many of them will go through a period of unemployment when, like the coal miners, they will have no wages; and they will disregard the decision of the Railroad Labor Board which heretofore, if it has favored either side, has favored them and not the railways.

The Transportation Act relies upon public opinion to enforce the awards of the Labor Board. Public opinion demands that the employees as well as the railways shall accept the awards made by it when made in the exercise of its legal authority. The awards to which the employees object were so made. If the employees strike they will be defying both

the Labor Board and public opinion. They will show that public opinion is not sufficient to secure conformity to the Board's awards by the employees. It is most improbable that after striking they would get higher wages than those awarded by the Board. It is quite possible, however, that they would destroy the whole plan of peaceably settling labor controversies in the railroad industry which the government has established.

Which would railway employees rather have—a situation like that now existing in the coal mining industry or one like that now existing in the railroad industry? Apparently, their leaders, while perfectly willing to accept all decisions made by the Board which are in their favor, would rather destroy it than accept any decisions it may make which are adverse to their claims. Will the employees support their leaders in trying to carry out such an unfair policy? Will they support their leaders by engaging in a strike which almost certainly would not result in their getting higher wages than those awarded by the Board or which economic conditions would force the railways to pay them, but which might result in the destruction of the plan of settling labor controversies which, on the whole, has thus far worked to the advantage of the employees?

We shall soon know whether railway employees prefer such anarchic conditions as now prevail in the coal mining industry, or the orderly and, from their standpoint at least, beneficial procedure in respect to labor controversies which has now prevailed in the railroad industry for more than two years.

Overloading the Division Engineer

ONE OF THE MOST FRUITFUL topics for discussion among maintenance of way officers is the maximum length of sub-division which should be assigned to a roadmaster or track supervisor. This question could be raised with equal appropriateness with reference to the proper length of the division engineer's territory. It is hard to reconcile the discrepancies in the lengths of territories or in the number of miles of line assigned to division engineers on different railways. Roads of more or less similar physical characteristics and traffic vary in their practices in this respect almost as widely as roads totally unlike. This may arise because of the fact that the present division limits are the heritage of organizations developed many years ago when there was a smaller mileage of tracks per mile of line and fewer other complicating factors.

In general the division engineer is in effect an assistant superintendent in charge of maintenance of way and as such his territory coincides with that of the division superintendent. A few months ago there was a distinct tendency, particularly among the western roads, to reduce the number of divisions by giving each superintendent more mileage. This in turn has added to the mileage of tracks under the supervision of the division engineer. In some cases his problem has been complicated still further by the fact that his jurisdiction has been extended to include two or more divisions.

The division engineer has to exercise detailed supervision to secure the best results. His forces are scattered in small units over the entire territory and do not come to a common point at any time in the regular course of their work. To exercise such supervision it is necessary for the supervisory maintenance of way officers to visit the gangs on the line frequently in order to insure that they are performing their work economically. It is impossible for the division engineer to do this over a long division of multiple track line handling heavy traffic. It is practicable, of course, to handle a greater mileage of single track lines with medium to light traffic than of busy multiple tracks and divisions of 300 miles or even more are not impracticable in most such cases. But a dense traffic multiple track division of 300 miles of line may aggregate as much as 800 miles or more of main tracks in addition to terminals. Such tracks must of necessity be maintained in condition to handle comparatively fast and dense traffic, and the forces required are increased accordingly. The magnitude of maintenance of way expenditures today is so great that it would seem desirable that the officers of the maintenance of way and operating departments study their organizations at frequent intervals in the light of the conditions which exist in order to keep them abreast of the developments of the road itself. It is not unlikely that such an investigation would develop the fact that there are divisions which should be lengthened—and others that should be shortened to secure the best results.

Coal, and the Railroad Situation

IT IS HIGH TIME that the effects that may be produced by the coal strike on the transportation situation and general business were given more consideration. There is very great danger that unless something is done soon to increase the production and transportation of coal there will be thrown upon the railways after the strike is ended a burden greater than they can bear. The public should be warned now of conditions which apparently are going to develop on the railroads unless the amount of coal given to them to handle speedily is largely increased.

The *Railway Age* in an editorial in its last issue gave some facts which indicate that a serious congestion of traffic and shortage of cars may come this fall and winter. Some persons and publications have expressed the opinion that we are unduly alarmed. Let us consider the situation in the light of the latest available facts.

In the year 1920 the railways handled the largest traffic in their history. Excepting coal, they recently have been handling more traffic than they did in the corresponding part of the year 1920. In the week ended June 11, 1920, the number of cars loaded with all kinds of freight was 930,976. Of this number 191,494 cars were loaded with coal, leaving 739,472 that were loaded with other freight. In the week ended June 10, 1922, the number of cars loaded with all kinds of freight was 846,002. Of this number only 94,824 cars were loaded with coal, leaving a total of 751,178 cars that were loaded with other kinds of freight. The number of cars loaded with freight other than coal was 11,706 more than in the corresponding week of 1920.

Traffic always increases during the late summer and early fall months. This is especially true of coal traffic. The average number of car loads of coal handled by the railways in the weeks from September 25 to December 18, 1920, was 217,200. This was 112,191 more than the number of cars of coal shipped in the week ended June 10, 1922. If the railways in the week ended June 10, 1922, had handled as much coal as the average amount handled weekly in the fall and winter months of 1920, their total car loadings would have been 958,193. The largest traffic they ever handled in any week was in that ending October 15, 1920, and was 1,018,539 car loads. Of this 226,671 car loads were coal, leaving 791,868 car loads of other traffic. If this figure be compared with that for the amount of traffic other than coal handled in the week ended June 10, 1922, it will be found that in this latter week the amount of traffic other than coal handled was *only five per cent less than the amount of traffic other than coal handled in the week ended October* 15, 1920, *the largest week's business in history.*

Does anybody doubt that traffic other than coal is going to increase between now and October? In 1920, between the

week ended June 11 and the week ended October 15, traffic other than coal increased 52,396 car loads, or over seven per cent. At that time the country was entering a period of violent business readjustment and depression, and the increase in traffic between June and October was not normally large. This year the country apparently is in a period of increasing business activity. This indicates that the increase in traffic other than coal between now and fall will be more than normal.

The amount of coal produced and transported during the first half of 1921 was about 60 million tons less than the average amount produced and transported in the first half of the last five years. This plainly indicates that after the strike ends the railways will be called upon not only to deal with at least a normal increase of other traffic, but to handle an abnormal coal business. All these facts seem to make it reasonably sure that after the coal strike is settled the demand for railroad transportation will be greater than ever before.

One of the most ominous features of the situation is that up to the date of the latest available report the amount of coal which had been carried by the railways to the Lake Erie ports and thence by water to the head of the lakes to supply the needs of the northwest was only about three million tons. At this time last year the amount of coal that had been dumped at the head of the lakes exceeded eight million tons. If the northwest is to have sufficient fuel to carry it through the winter there must be dumped at the head of the lakes during the season of navigation from 25 to 30 million tons of coal, and already the dumpings at the head of the lakes are five million tons below normal.

The situation developing demands speedy and constructive action. The production of coal must soon be increased. The shipments of all other freight which can be accelerated must be accelerated. The railways must get ready as rapidly as practicable to deal with a record-breaking business. The shipping public must prepare to co-operate with the railways by loading cars heavier and loading and unloading them as rapidly as practicable.

Whatever the cause or causes of traffic congestions and car shortages, it always has been in the past the custom for some newspapers and regulating bodies and many people to denounce and fume at the railways for such conditions. The railways are in no way responsible for the coal strike or its probable disagreeable and costly aftermath, and in this instance co-operation with them of all who can help solve the problem which will be presented should be substituted for the usual outcry against them.

New Books

The Engineering Index, 1921. 584 *pages, 7 in. by 9½ in., bound in cloth. Published by The American Society of Mechanical Engineers, 29 West Thirty-ninth Street, New York.*

The Engineering Index has for years been considered an absolutely essential reference book by those who wish to keep in touch with current engineering literature. The first volume of the Index appeared in 1892 and the book has been issued annually since 1906. The current volume contains over 14,000 items referring to articles which appeared in some 600 engineering and other technical publications. In the preparation of the Index the staff of the Society reviewed more than 1,200 periodicals, reports and other publications regularly received during the year by the Engineering Societies' Library, New York. These publications were printed in ten different languages and, as a result, the book is the most complete reference to scientific and engineering current literature in the world. The railway field is, if anything, even more completely covered than in former editions.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

Talk Money to Employees

CHICAGO.

TO THE EDITOR:

At a meeting of the Western Railway Club in Chicago a short time ago a paper pertaining to the education of railway employees was read by C. G. Juneau of the Chicago, Milwaukee & St. Paul. By a series of monthly bulletins, circular letters of instruction, and through meetings of employees this railroad apparently has accomplished wonderful results and the mechanical department officers are to be complimented not only as to their progress, but as to their sincerity in fitting their employees for better jobs, thereby helping the individual and by so doing helping the railroad. The writer has absolutely no criticism to make on Mr. Juneau's paper. The following is merely the result of thinking over the many good points brought out.

After considerable railroad service in the mechanical department, plus three years' service with a manufacturing corporation, I simply draw a comparison of the educational features in both lines and sum it up by saying that the railroads overlook in their endeavors to enlighten their employees the one big word "money."

In the manufacturing game we talk, eat and sleep money, not in a miserly fashion, but as a matter of pure business principle. Our first questions before buying a machine, for example, are: What is the cost? What will we make out of it? Can we afford it? Can we not resort to some other method? What is the other concern doing? Is it the best type of machine for the purpose? Have we enough work to keep it going? Will it take a skilled operator?

Everyone from the set-up man to the general manager is given an opportunity to voice an opinion and if the purchase is made everyone concerned is aware of the amount involved, the output expected, etc. Further, the general manager does not as an individual drop out in the plant, size up a situation, return to the office, order a machine, get it, and say to the superintendent "use it." To the contrary his superintendent reports, "The machine shop foreman wants an automatic machine and I approve his request," the committee is convened and the above questions are raised. The point is this: you can get results out of a machine when the man who expresses a desire for one gets it. If you force a machine on him your results are negligible.

When we run into a lot of scrap or defective parts we put the losses into money; we trace it to the individual responsible and we say to him, "Bill, you made $8.00 yesterday but you only earned $4.00. One half of your work was spoiled." We don't tell him he spoiled so many pieces; we put the figures in dollars and cents. On the other hand, if a day worker has given us an extraordinary amount of good work we place this to his credit and tell him in money how much he has saved.

We talk money to the individual employee in many ways We say, "Bill, while you are a human being and we will treat you as such, nevertheless from a business standpoint we look on you as an investment. You are earning $2,400 a year. You represent to us an annual expenditure of $2,400 just the same as that milling machine you run. We

expect a ten per cent return from these two investments. When you and the machine earn this return, our company will prosper and so will you. If you or the machine don't function properly, we all lose. And as we most certainly expect to take care of any depreciation or break-downs in our machine investment, we most certainly will take care of you."

We get all of our lead men together in meetings and reflect all of their operations, losses, earnings, etc., by money figures, not pounds or pieces. We draw a circle (representing a dollar) on the blackboard and to reflect operating costs we portion this off in segments and show that for each dollar spent, 50 cents went for labor, 30 cents for material, 8 cents for overhead, etc., until the entire dollar is disposed of. We also show them in the same way the net results of the sale of a dollar's worth of goods. So much for making the article, so much for sales expense, and so on, taking in taxation, insurance, and last, but not least, the stockholders' share. Each employee is posted as to the value of the article he works on so that he will understand the monetary loss in the event it is spoiled.

Now, realizing that dollars and cents are seldom, if ever, mentioned to the railroad employees holding positions below that of supervisors, if I were in charge these are some of the things I would do:

Give the apprentices to understand that on everything they work they are using someone's money and to loaf or spoil through carelessness is nothing short of obtaining money under false pretenses. As the boys of today are our men of tomorrow, I would lay particular stress on this feature.

See that so far as is possible money values are placed on all commodities used. As it is now a foreman orders a piece of material, the requisition is priced by a clerk of the store department, sent to the shop accountant and distributed to the proper account. At the end of the month, the shop superintendent gets one figure showing what his bill for locomotive material was. He may know individual costs but the point is the man who is machining or applying the piece does not. Isn't it true that the average railroader thinks "This company is worth $250,000,000.00; what does a piece of material thrown away mean to them? I'll throw this away and get a new piece instead of repairing it." Now, if this man knew that the piece he was discarding represented one dollar instead of just a piece of material, he naturally would hesitate.

I would start a propaganda throughout my railroad so that every employee would think "How would I do this or what would I do if this was my own money I was spending instead of the company's?" If you can make the man feel that he is reaching right down in his jeans to pay for the work he is doing, you can rest assured he will be careful.

I wouldn't go to a car inspector and say, "'Bill, number 53 had a derailment north of here last night. Defective drawbar dropped down; be careful." I would say, "Bill, by your carelessness number 53 was derailed; drawbar dropped down. Damage to equipment was $6,500 which is more money than you could earn in four or five years. You ought to work for this company for five years for nothing." And believe me he would sit up and take notice.

I would have the valuation department see that the man in charge of any equipment or property was cognizant of its value so he could go to the individual and inform him of the responsibility resting on him in handling a machine representing a given amount of the company's money.

I would tell my engine crews that it cost them so many dollars for coal for handling a passenger train over the division whereas the crew that handled the same train yesterday operated ten dollars cheaper. I would not mention the saving or waste in pounds; make it money.

I would see that my train dispatchers were informed of money losses by mishandling trains over their territory.

I would get my auditing department lined up to check joint facilities by first getting a true value of these facilities and working it down through the operation end so that I would not be paying out or investing money for the benefit of some other company.

I would say to my traffic department "The XYZ Railroad got that freight business out of Bloomington. You have lost so many dollars worth of business by failing to land it."

I would see that sufficient analysis was made of the work being performed by my supervisors to know that high salaried men were not being tied up with responsibilities that could be handled by cheaper men, so that the supervisor could devote more time to a study of economies. How many general foremen and foremen in the mechanical department are principally material chasers, so busy they have no opportunity for time study which more than anything else means money?

In every instance where I learned that another railroad was performing a certain operation more economically than I was, I would send my representatives over to find out why. And so on, always talking money.

Your employees should know more about actual costs and you can rest easy that their knowledge will be beneficial to you. I recommend that all railroads follow the lead of the Chicago, Milwaukee & St. Paul and emphasize particularly MONEY.

GRANT GIBSON.

The Transportation Act of 1920

TO THE EDITOR:

We have heard much criticism of the Transportation Act of 1920 from the public, the employee, managements and shippers. Each group condemns it on account of certain provisions, but to criticize this legislation intelligently, the act must be considered as a whole. Furthermore, this legislation must be considered from the standpoint of the transportation needs of the country as a whole, and not any particular state, community or other designated territory.

In order to grasp this viewpoint, we will illustrate with the grain grown in Kansas. As a matter of fairness to the Kansan, it would be asking too much to burden him with a transportation bill necessary to provide a return on sufficient railroad trackage and equipment to move the entire output of grain of that state, even to the border of his own state, for the reason that the amount produced is greatly in excess of his needs. The man in New York is as vitally interested in an adequate transportation system for Kansas as the Kansas man himself; likewise, this same principle is applicable to the products of the east, the north and the south. Therefore, as a matter of economy and self-preservation, the transportation bill of the country as a whole should be paid by the country as a whole and the transportation problem can only be handled fairly and economically as a national one.

There are four groups vitally interested in the transportation problem of our country; namely, the public, the employee, the shipper and the investor. Public opinion ranks them in the importance named, notwithstanding how unfair or unfortunate such classification may seem to an individual class. The interests of these four groups are shown in the order named which in itself shows the wisdom of public opinion's classification.

First—The public's interest is a transportation system adequate to take care of the needs of the country, at a reasonable cost for service, without interruption.

Second—The employee may have selfish interests, but his interests are subordinated to those of the public; therefore, he is entitled to a comparative fair rate of compensation, not hourly or daily, but annually under proper working conditions.

Third—The shipper may have selfish interests, but, his interests being subordinated to that of both public and employee, he is entitled to dependable service without interruption, rates on a parity with his competitors (both individual and community) and as low as will provide the necessary capital to create the transportation system demanded by the first interest and compensate the second interest.

Fourth—The investor, like the employee, may have selfish interests, but such interest is subordinated to that of the public and employee, and shipper, and under the present school of public thought, he will be permitted to make only a nominal return on his investment, the permanency of which will compensate him for the small return.

Will the Transportation Act properly administered provide such conditions essential to public welfare?

The Public.—The first interest of the public, "A transportation system ample to take care of the needs of the country" is provided by empowering the Interstate Commerce Commission to name rates that will permit a fair return on the investment in property used in transportation service (not guarantee as many ill-advised people have been led to believe). This provision, it must be understood, does not mention stocks, bonds or any other securities outstanding, but permits a fair return (the amount of which constitutes a fair return to be determined by the Interstate Commerce Commission from time to time.). The most recent decision of the commission reduces this rate from 6 per cent to 5¾ per cent on the value of the physical property employed in the system of transportation. Furthermore, the value is to be determined by the Interstate Commerce Commission.

Physical units of property constitute right-of-way, ties, rails, ballast, bridges, locomotives, cars, etc. The term does not include good will, which is a valuable asset.

The second interest of the public—reasonable cost of service—is provided for: in part, by the Railroad Labor Board, a creature of the public which names the rate of pay for labor costing 50 per cent of the total; in part, by the Interstate Commerce Commission's power to determine the maximum return on investment; and the general market for supplies which railroads use.

The Employee.—The selfish interests of the employee are guarded by the personnel of the Railroad Labor Board by a two-thirds of its members having no personal interest in the rate of pay; likewise, justice to the employee is guaranteed Board through another two-thirds of its members.

The Shipper.—His first interest, "dependable service without interruption" is guaranteed by the Interstate Commerce Commission's power to provide rates ample to secure capital to provide the transportation system and the power of the Labor Board to name rates of pay that will attract employees. It may be argued that the latter has not power to enforce its decisions and much criticism has been directed at this feature. However, this provision is one of its strongest and under a democratic form of government could not and should not be otherwise. This provision will be more rigidly adhered to by both managements and organizations of labor than any provision of the law and each decision of the Board will be more strictly obeyed than the preceding one.

His second interest, "rates on a parity with competitors," he has always enjoyed except in isolated cases and the Interstate Commerce Commission with its new power of naming minimum as well as maximum rates can prevent unduly low rates being named on specific commodities or in favor of communities and individuals.

His third interest, "as low rates as will provide capital to create a transportation system adequate for his needs." This interest is provided by permitting railroads to earn a fair return on investment in railway property, and the provision that the government is authorized to loan money at six per cent from its revolving fund, which will prevent railroads from being compelled to pay a higher rate in the future; furthermore, lower transportation rates will obtain through the increased traffic of the country and the provision restricting railroad building to projects authorized by the Interstate Commerce Commission restrains speculative enterprises and thus relieves the transportation bill of the country of the burden of supporting non-productive properties.

The Investor.—The interest of the investor, "his return on his investment," is not guaranteed as some would lead us to believe, but he is assured by the law that his government will permit rates for railroad service that should yield a fair return (5¾ per cent at present) on the value of the railroad property investment of the country. If he has been unfortunate and purchased securities representing which there is no physical units, he must take his loss; likewise, if he has purchased securities representing excess physical units, he is entitled to any gain therefrom.

It should not be assumed in the future all railroads will earn a 5¾ per cent rate of return and thereby establish a 5¾ per cent market for securities but on the other hand, railroad credit having been established by law on a sound base, will eventually enable railroads to borrow money at the lowest market rate.

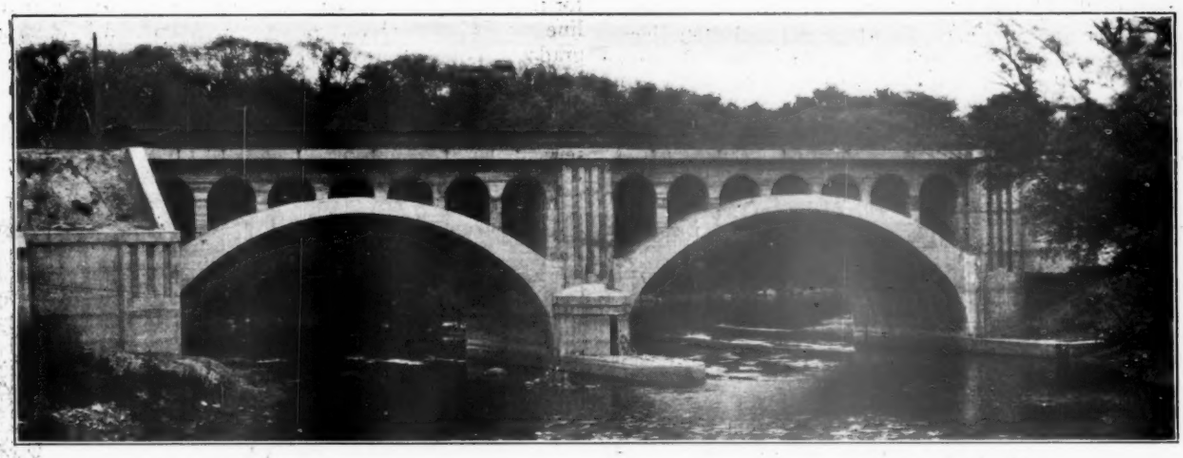
This act also provides that if any railroad earns an income in excess of six per cent such excess amount is prorated equally between the government and the railroad. The government's proportion of excess earnings so accumulated is to be used to loan to railroads at six per cent for additional facilities. The railroad's proportion so accumulated must be set aside in a reserve fund until such time as such reserve fund equals five per cent of its physical property value. After such fund has been accumulated the railroad is permitted to distribute excess earnings.

NOTE.—The arbitrary rate of six per cent named by the act for the use of the fund accumulated from excess earnings should be amended to permit the commission to loan this fund at a fair rate of interest to be determined by the commission. Otherwise, the fund accumulated under this provision will lie dormant in the treasury as undoubtedly in the future only weak roads with poor credit will be compelled to pay six per cent for funds. Thus a fund created from excess charges for transportation will not be available for the enlargement of facilities at a nominal cost.

The two latter provisions of the act will react to the benefit of the public owing to the powers granted the commission to lower the rate of return permissible on railroad property from time to time in keeping with the market price of funds. Thus by the different features of the act dovetailing with each other, we furnish the public with an economical, adequate transportation system, through restricted building and economical financing, with an employee fairly compensated under proper working conditions, with a shipper contented with comparatively the cheapest rate ever enjoyed with uninterrupted service, and an investor contented with a nominal return, the permanency of which is assured by the growth of the country.

The additional benefits to be derived from the operation of the Transportation Act will be the reduction in operating expenses by the increase in capital expenditures. In other words, prior to the Transportation Act of 1920, there was no incentive for the making of capital expenditures, that is, the public was a great deal more watchful over the amount expended for interest and dividends on capital than for any other purpose; therefore, every railroad employee and officer was charging as much of any replacement to expenses as possible—owing to necessity, capital not being available. Now that a plan has been provided that will attract the necessary capital for increased facilities, the incentive has been restored to capitalize such betterments. Thus operating expenses will be relieved of the burden of many capital expenditures heretofore carried through necessity.

A. A. LAMPERT,
Auditor, Missouri & Illinois Bridge & Belt R. R.



One of the Fox River Bridges

Aurora Track Elevation Expedites Traffic

Burlington's Grade Separation Project Is Supplemented by a Plan for Increasing Facilities

THE ELIMINATION of grade crossings between the streets of Aurora, Ill., and the tracks of the Chicago, Burlington & Quincy is only one of a number of improvements to be effected by the completion of track elevation work now in progress in that city. The grade and alinement will be improved, additional trackage will be provided, new local freight and passenger facilities will be constructed and additional space will be afforded for the further development of the extensive locomotive and car repair facilities maintained by the Burlington in that city. These physical changes, coupled with a new operating arrangement, will greatly expedite the movement of traffic through what has been a neck-in-the-bottle on the main trunk line of the Burlington out of Chicago.

Looking North East from Spring Street, Partly Completed Embankment on the Right

Aurora is located 37 miles from Chicago where the three-track main line of the Burlington divides into a double track line to Galesburg and the west and southwest, a single track line to Savanna, Ill., and the north, and a single track line known as the Streator branch. While Aurora is the terminal point only for trains of the Streator branch, a considerable amount of switching is done here in connection with the transfer or interchange with the Elgin, Joliet & Eastern at Eola, three miles to the east and to fill out trains destined for Chicago. Being a manufacturing city of about 40,000 population, it originates a considerable amount of traffic which, together with the "company" freight incidental to the operation of the car and locomotive shops and a storehouse, also calls for an extensive switching movement. About 50 passenger trains are operated through the station each day, a portion of which must be afforded terminal facilities since Aurora is the terminus for a considerable part of the suburban passenger service maintained by the Burlington.

Physical conditions have seriously hampered the handling of the Burlington's business through Aurora. The city is located on the banks of the Fox river so that access to it is obtained only by a descent into the river valley. This has entailed appreciable grades on the railroad, particularly to the east on the line to Chicago and to the west on the Savanna line. It has also resulted in a rather tortuous alinement and this, together with the 0.5 per cent grade eastward, has necessitated pusher service for freight trains. A further complication was a right of way only 36 ft. wide through the busi-

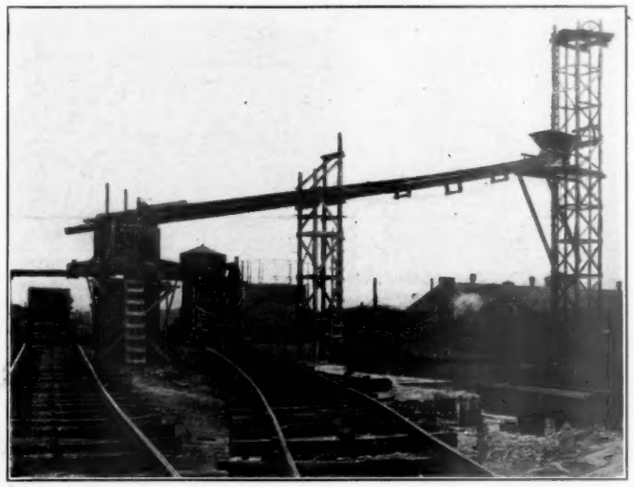
ness part of the city and immediately west of the passenger station and engine terminal. This terminal and the adjacent shop facilities have been seriously cramped for space and because of the lead tracks which enter them from the south it has been necessary to conduct the switching movements across important business streets where the right of way is the narrowest. This also had served to interfere with the efficient handling of the suburban passenger trains.

Coupled with this unsatisfactory condition as regards the handling of railway traffic has been an exceedingly serious situation with respect to grade crossings in the city streets, which was responsible in 1914 for the passing of an ordinance by the city and an order by the State Public Utilities Commission providing for grade separation. After some investigation as to the possibilities of a detour line that would enable through traffic to avoid the city, a decision was made to adopt a plan for track elevation involving a considerable revision of alinement and accompanied with provision for additional tracks and other added facilities that would greatly increase the traffic capacity of the line through the city. An auxiliary project has been the construction of a yard and engine terminal at Eola to facilitate interchange with the Elgin, Joliet & Eastern and provide adequately at that point for all remaking of main line freight trains that is necessary. This not only releases considerable yard trackage in Aurora occupying space which will be utilized for the enlargement of the locomotive and car repair facilities but it will also greatly reduce the amount of switching within the city.

The plan for track elevation provides for the elevating of the tracks a maximum of about 22 ft., so as to provide adequately for under-crossings for the streets and obtain a maximum eastbound grade of 0.3 per cent compensated which will obviate the necessity for pusher service. The total length of the elevation is 4.51 miles on the main line and 0.67 miles on the Savanna line.

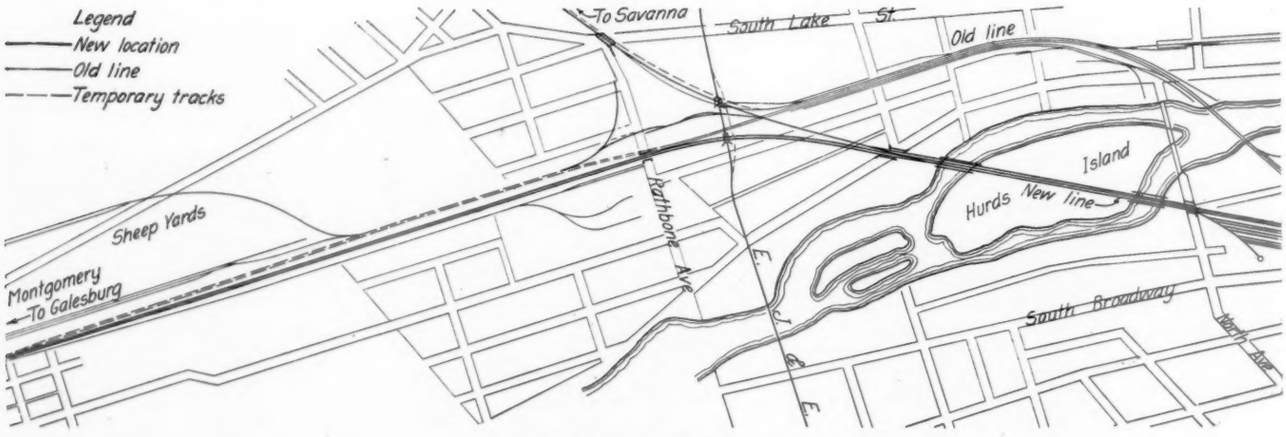
South of the station a marked improvement in the alinement was effected by a new line across Hurds Island. North of the station the new location is thrown against the hillside to the east as a means of obtaining support for the elevated line. This change also adds to the space available for the shop facilities.

The project provides subways for the passage of 14 streets underneath the tracks and also for two under crossings of the Aurora branch of the Elgin, Joliet & Eastern which crosses the Burlington in the southern portion of the city. Physical conditions favor the construction of the runoffs connecting the new and the old grades at the ends of the track elevation territory. At the north end of the city this occurs in a cut where three overhead crossings are readily provided for the only streets crossing the right of way. On the Savanna line the runoff is very readily made because the original grade was on a 0.9 per cent descent into the city, while on the Galesburg main line the change of grade involves a runoff a mile long extending almost to Montgomery, the first station to the south. This involves some changes in the tracks serving the sheep yards maintained by the Burlington at that point, but the problem was not complicated in any way by intersecting streets or highways.



The Concrete Plant as Seen from the Elevated Structure. Hopper Car Loading Station on the Left

One interesting feature of the project was the cutoff across Hurds Island involving a fill 32 ft. high and arch bridges across the two branches of the Fox river, one of three 65-ft. arches and the other two arch spans of the same length.



South End of Track Elevation District

Another unusual complication on this line was the presence of an abandoned stone quarry on the location, which had been excavated to a depth of 70 ft. below the track level. The filling of this quarry required 400,000 yds. of material.

Reinforced Concrete Structures

Following established practice on the Burlington, the street subways are of reinforced concrete of the character shown in the photographs. In general, these consist of four spans of reinforced concrete slabs supported on abutments and three reinforced concrete bents. At one point, the crossing of Benton, Broadway and Clark streets by one continuous structure on a skew entails rather complex construction.

Here it was necessary to introduce structural steel facia girders to carry the ends of floor slabs not supported by the bents. In other respects, the subway construction conforms closely to that followed by the Burlington on the other track elevation work.

For the three blocks from Fox street to Spring street a marked departure has been made from usual practice in the use of a continuous elevated viaduct of reinforced concrete in place of an embankment supported between retaining walls

The Temporary Passenger Station Looking South West

and pierced by subways at the intersecting streets. Comparative cost estimates of the two forms of construction under the conditions imposed at this point gave favorable results for the elevated concrete viaduct, but an important factor in the decision to adopt this form of construction was the value of the space below the tracks, since it is located in the heart of Aurora's business district. The type of construction adopted, a flat slab construction with columns spaced 19 ft. in one direction and 18 ft. the other lends itself very readily to the use of this space either as passageways or for commercial purposes.

The Construction Plan

Unlike most grade separation projects, the Aurora track elevation was readily prosecuted according to a plan that gave a minimum interference with train operation. Obviously, the two changes of line were of special advantage in this connection, since the work on the new alinement could be carried out without interference with train movement. For the construction of the runoffs at the ends of the work, temporary operating tracks were provided on offset locations.

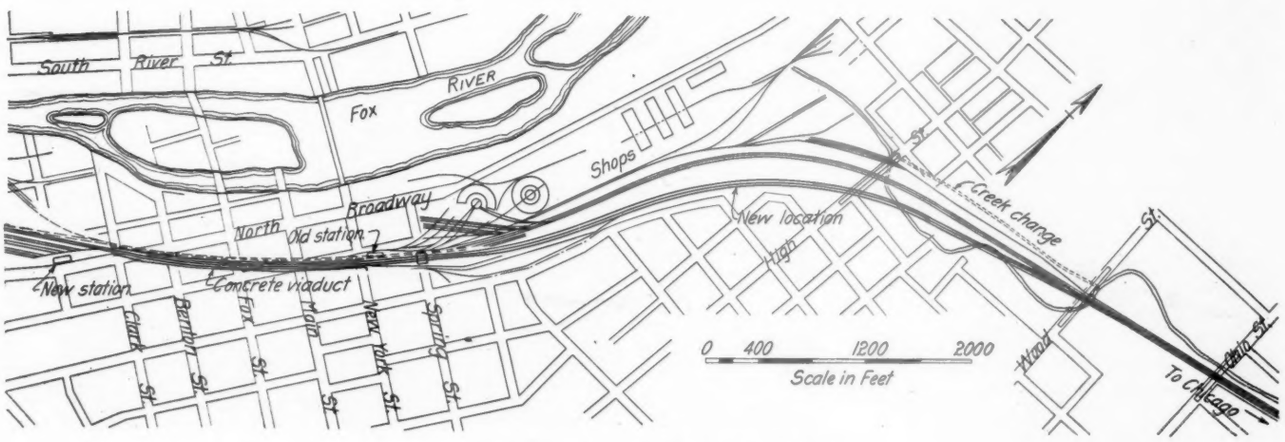
The plan adopted calls for four main tracks on the elevation north of Spring street and five tracks south of that point, but only three tracks are to be constructed at the present time. The neck-of-the-bottle, that is from New York street to Washington street, was broken by the purchase of additional right of way to make room for two operated tracks on the surface while the structure is being built for three tracks on the new grade. The flat slab viaduct is of particular advantage in this connection because it obviates the necessity of a temporary retaining wall between the two surface tracks and those on the elevation. This is clearly brought out in one of the photographs.

Work Started at the South End

The initial work was done on the structures at the south end of the district. This included the river bridges and the subways at North avenue, River street and Rathbone avenue, as all these could be built without interference with the track. Following this, temporary main tracks north of Montgomery were constructed and a contract awarded to Morris & Daugherty for the filling between Montgomery and the north end of the cutoff. This involved a million cubic yards of filling and was taken from a shovel cut west of Montgomery, the average haul being about 3½ miles. This work was carried out intermittently for a number of years, during which the other structures on the southern portion of the project were completed until 1920, when traffic was turned over the cutoff with a runoff at Broadway.

About that time work was undertaken on the north end of the project, the grading on the relocated line being carried as far as possible without involving interference with the existing yards north of Spring street. In conjunction with this work, the viaduct at High street was constructed and the piers for viaducts at Wood and Ohio streets were partly built. They will not be completed until the temporary tracks are abandoned. The viaduct for High street involves four truss spans and several reinforced concrete approach spans.

The final and most complicated step in the work is now in progress and comprises the closing of the gap between the ends of the work previously done. This involves the work in the business part of the city including the provision for structures over eight streets and the filling north of Spring street, where the embankment will cover a considerable portion of the freight yard which cannot be abandoned until additional yard facilities are completed at Eola.



North End of Track Elevation District

The prosecution of this portion of the work also involves the solution of the problem of a new passenger station which was finally concluded by the selection of a new site 3,000 ft. south of the existing station on unoccupied land fronting on South Broadway. Here space was available for six station tracks in addition to the three main tracks and four coach

storage tracks, a turntable and a cinder pit. All the station tracks are to be elevated, with access to and from the passenger station by means of a subway with three communicating stairways. To permit the wrecking of the old station at New York street preparatory to the construction of the elevated structure, the new station site was utilized for a temporary station which consists virtually of the south end of the final station track layout supplemented by a temporary station building. Work on the new station will be undertaken shortly.

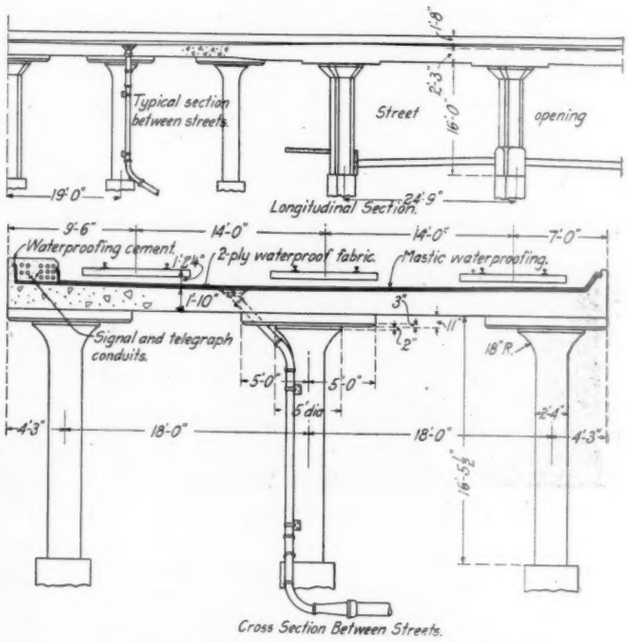
The work between Clark and Spring streets is primarily a structural one since the grading is a relatively minor feature. It involves the placing of 15,500 cu. yd. of concrete, a quantity clearly justifying the application of considerable thought to the development of an efficient concreting plant. This has taken the form of a duplicate mixing plant in the space immediately west of the tracks between Benton and Clark streets where some buildings and a yard were acquired with a right of way purchase. This afforded space for the storage of 9,000 bbl. of cement and some large piles of gravel and for the housing of two concrete mixers with superimposed material hoppers of 60 cu. yd. capacity, four hoisting engines

The "Neck of the Bottle" Looking North East, Temporary Tracks on the Left, New Three-Track Concrete Viaduct on the Right

for the handling of two material derricks and two elevating towers, two locomotive type boilers supplying steam to the concrete mixers, the hoisting engine and two pumps. One of the old buildings is also used as a carpenter shop for the housing of power tools used in connection with the form work.

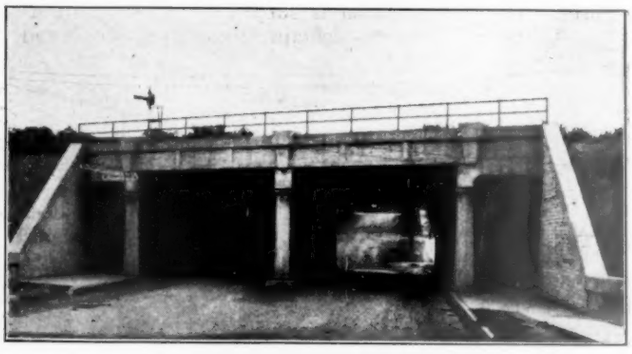
The concrete is elevated in towers and discharged in chutes by which it is transmitted direct to a considerable part of the form. For the more remote work, that is north of Benton street, the concrete is chuted into auxiliary hoppers which in turn deliver the concrete to hopper cars operated on a standard-gage track erected above the structure. These cars are delivered to the forms by Fairmont section cars, as illustrated in one of the photographs. This double concrete plant operated with the motor car delivery has a capacity of 50 cu. yd. of concrete per hour continuous operation. It has been effective in placing 386 cu. yd. in 11 hr. while there is a faster record of 211 cu. yd. in 4 hr. and 45 min. The duplication of the mixer was considered essential as insurance against a stoppage of the work in case of a breakdown which would have been a rather serious matter for the flat slab construction adopted between Fox and Spring streets. This concrete plant is being used for all of the work except the footings and columns of the flat slab structure. For these a portable concrete plant set up on a car operated on a track laid between the columns was used. This plant was equipped with a tower high enough to reach the tops of the columns.

The presence of bed rock at a reasonable depth below the



Typical Details of the Concrete Viaduct

surface afforded an easy solution of the foundation problem. Rectangular pits were excavated to the rock level and filled with concrete to the surface. In most cases the rock was found at a depth of from 12 to 19 ft. but for one of the bents a cleft or fissure was encountered which required an excavation to a depth of 40 ft. before the rock was reached. The excavation was made with the aid of two small derricks



A Typical Track Elevation Subway

mounted on cars, one of these being a rail layer derrick with a self-propelling car. These derricks were used to hoist bottom-dump buckets which had been filled by hand and were dumped into wagons, each derrick car serving several pits simultaneously.

The program now laid out contemplates the completion of the work during the coming season. The concrete structure is now virtually completed as far as Main street so that the remaining work consists only in extending this to Spring street. The grading involves the completion of the fill from that point to the vicinity of Liberty street and the completion of the runoff at the north end, a total of about 200,000 cu. yd. of fill.

This project is being handled under the general direction of A. W. Newton, chief engineer, and C. L. Persons, assistant chief engineer, of the Chicago, Burlington & Quincy. All bridges and viaducts were designed under the direction of G. A. Haggander, bridge engineer; all building work has been done by the building department under the direction of W. T. Krausch and all signal work under the supervision of J. B. Latimer, signal engineer. C. J. McCarty, engineer of track elevation, is in direct charge of the work on the ground.

The Effect of Traffic Fluctuations on Operating Expenses

TO WHAT EXTENT should expenses increase when traffic increases? How large a decrease in expenses should be expected when traffic decreases? These are questions which constantly confront all executive and operating officers as the tide of traffic rises and falls. Everyone familiar with the facts and conditions of railroad operation knows that operating expenses neither increase nor decrease in the same ratio as traffic. It is a matter of judgment, however, as to the extent to which expenses lag behind traffic changes.

This question, like almost all statistical problems, is not subject to definite rule. The cause of the condition is well known. In the grand total of railroad operating expenses, there are certain items which fluctuate with traffic. There are others which are but partly affected, and a few which are practically unaffected by normal fluctuations in business over a considerable period. There is a fourth element, which includes maintenance expenses and which is, to a certain degree, subject to company policy. In the first or directly variable element are included labor expenses at large stations, yard expenses in large terminals and through freight train expense. In the second or semi-variable group are included expenses of medium sized stations and yards and expenses for local freight trains. In the third, or fixed group, are included supervisory expense and expenses for small stations and yards, towers, drawbridges and crossings, the larger proportion of passenger train expenses and general and traffic expenses. This classification is subject to many qualifications. Almost all accounts contain elements of fixed and variable expense, and at times of depression, all expenses are subject to reduction. Nevertheless, it is believed that for normal increases and decreases, the operating charges fall into these general groupings.

It is of no value to know that expenses are divided into three groups of which one is fixed, one variable and one semi-variable. It explains the cause of the condition, but it does not analyze its effect. The following method was developed in an attempt to determine for use of operating officers the extent to which expenses should follow traffic changes. This method was applied to transportation expenses alone, since maintenance charges are to so great an extent dependent upon policy.

The measure of expense used was the man hours. This was due to the fact that labor is the controlling factor in transportation expenses, the changes in the amounts of fuel and material used being reflected in fluctuations in charges for labor. The man hours, rather than payrolls, were used on account of the disturbing element of changes in wage rates.

The measure of freight traffic used was the gross ton miles. This unit reflects better than any other the amount of transportation which the operating department is called upon to handle.

The factor used in measuring passenger business was the passenger train miles. Here again it should be pointed out that the most desirable unit is that which controls the expense. The increase in the number of passengers necessitates little, if any, additional expense, and even the increase in the number of cars per train does not materially affect the passenger expenses as a whole. On the other hand, the addition or elimination of a train directly affects all passenger train expenses and may reflect a change in the amount of business which will justify an increase or decrease in passenger station and yard expenses.

We have then the transportation man hours, gross ton miles and passenger train miles. In the study made, these statistics were obtained by months for a three year period. They were then all translated into index numbers, using the first month of the first year as 100. The results below are fictitious but are indicative of the results obtained:

INDEX NUMBERS—JANUARY 1ST YEAR = 100

	First year			Second year			Third year		
Month	Man hrs.	Gross ton miles	Pass. train miles	Man hrs.	Gross ton miles	Pass. train miles	Man hrs.	Gross ton miles	Pass. train miles
January	100	100	100	101	105	102	103	104	102
February	96	94	88	96	100	90	98	92	90
March	100	102	92	101	109	103	103	100	101
April	103	106	100	103	116	104	101	98	102
May	105	113	103	104	118	105	102	104	101
June	105	112	108	104	115	109	101	103	102
July	106	106	115	108	118	117	102	101	109
August	107	109	118	109	119	120	101	100	108
September	107	112	117	110	122	119	102	103	108
October	107	118	108	110	128	110	100	102	104
November	103	111	104	106	114	106	100	100	103
December	101	104	102	104	106	105	99	96	100

The next problem which presents itself is that of determining the relative effect of freight and passenger business. The fluctuations of the two differ widely and it is necessary to obtain the combined effect of the two on the man hours. The importance of freight and passenger business on different railroads varies. If transportation expenses are made up, half freight and half passenger, it is possible to obtain the combined index by finding the simple average of the gross ton mile and the passenger train mile indexes. For example, in January of the first year, the combined index would be 100, February 91, March 97, April 103, and so on. On the other hand, if expenses are divided one-third passenger and two-thirds freight, a weighted average of the two would be necessary. The combined index for January would be 100, February 92, March 99, April 104, etc. With a combined index of freight and passenger business, it is possible to check the fluctuations of all traffic with the changes in man hours. The simplest method is to show the increase or decrease each month, compared with the previous month.

	First year				Second year				Third year			
Month	Man hrs.	Monthly fluctuations	Traffic index	Monthly fluctuations	Man hrs	Monthly fluctuations	Traffic index	Monthly fluctuations	Man hrs.	Monthly fluctuations	Traffic index	Monthly fluctuations
January	100	....	100	....	101	....	103	....	103	— 1	103	— 3
February	96	— 4	91	— 9	96	— 5	95	— 8	98	— 5	91	—12
March	100	+ 4	97	+ 6	101	+ 5	106	+11	103	+ 5	101	+10
April	103	+ 3	103	+ 6	103	+ 2	110	+ 4	101	— 2	100	— 1
May	105	+ 2	108	+ 5	104	+ 1	112	+ 2	102	+ 1	103	+ 3
June	105	....	110	+ 2	104	....	112	....	101	— 1	103	....
July	106	+ 1	111	+ 1	108	+ 4	118	+ 6	102	+ 1	105	+ 2
August	107	+ 1	114	+ 3	109	+ 1	120	+ 2	101	— 1	104	— 1
September	107	....	115	+ 1	110	+ 1	121	+ 1	102	+ 1	106	+ 2
October	107	....	113	— 2	110	....	119	— 2	100	— 2	103	— 3
November	103	— 4	107	— 6	106	— 4	110	— 9	100	....	102	— 1
December	101	— 2	103	— 4	104	— 2	106	— 4	99	— 1	98	— 4
Total increase	...	+11	...	+24	...	+14	...	+26	...	+ 8	...	+17
And decreases	...	—10	...	—21	...	—11	...	—23	...	—13	...	—25

On the basis of the first example given above of the combined business index, the results would be:

February minus 9
March plus 6
April plus 3

For purpose of simple illustration, it is assumed in this example that freight and passenger traffic are equal in importance. The traffic index numbers given above, are, therefore, combined on that basis and the fluctuations of traffic and man hours are given in the table at the bottom of the preceding page.

In the first year, the decrease of traffic in February, as compared with January, is nine points, the decrease in man hours four points. March shows an increase in traffic over February of six points, while man hours increased but four points. For the first year, the total traffic increases amount to 24 points, while the man hour increases total eleven points. The total traffic decreases amount to twenty-one points, the total man hour decreases equal ten points. Likewise in the other two years, the man hour increases as compared with the traffic decreases, are as 14 to 26 and 8 to 17, while on the decrease side the ratios are 11 to 23 and 13 to 25. From this it is evident that the increases or decreases in man hours over a considerable period, were approximately one-half the increases or decreases in traffic. For this particular railroad, it is to be expected that the *per cent of increase or decrease in man hours and expense will be about one-half the per cent of increase or decrease in traffic.* The actual results on one railroad were 56 per cent for one year, 58 per cent in the second and 57 in the third.

It is not necessary, of course, to use the percentage actually obtained from the results of actual operation. If a better performance is to be sought in the example given, the standard percentage of increase to be expected would be a figure less than one-half the percentage of increase in business. If traffic increased 10 per cent, it would be the task of the operating department to hold the expenses to a figure less than 5 per cent above those for the period with which comparison is being made. On the other hand, when traffic decreases, the attempt will be made to reduce expenses by more than one-half the per cent of decrease in traffic. The value of the compilation similar to that shown above is that it shows what actually has taken place during several years and is a measure of what can be done.

This analysis is extremely valuable in the checking of expenses from month to month over a period of time. It is not practicable for short periods when fluctuations in business are frequent and do not materially affect expenses. Moreover, many exceptions to the rule will be found over longer periods because of particular conditions.

Nevertheless, it provides a measure of the relationship of traffic and expense fluctuations which will enable the chief operating officer to determine whether transportation expenses as a whole have been sufficiently reduced or too greatly increased. It provides a check on the entire situation, without attention to any special group of expenses.

Freight Car Loading

WASHINGTON, D. C.

THE NUMBER OF cars loaded with revenue freight show another considerable increase during the week ended June 17 to a total of 860,772, as compared with 775,328 in the corresponding week of last year and 916,736 in the corresponding week of 1920. As compared with the week of June 10 this was an increase of 14,000. The decrease as compared with 1920 was only 55,964 and is more than accounted for by the decrease in coal loading of 96,702. The coal loading was 63,172 less than for the corresponding week of 1921 and it was also a decrease of 2,688 as compared with the week before. The loading of miscellaneous freight alone showed an increase of 74,000 cars as compared with last year. All classes of commodities except grain and grain products and coal showed increases as compared with last year and all districts showed increases, while there were increases as compared with 1920 in the Pocahontas, Southern and Southwestern districts.

The summary, as compiled by the Car Service Division of the American Railway Association follows:

REVENUE FREIGHT LOADED SUMMARY

ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, JUNE 17, 1922

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1922	Corresponding year, 1921	Corresponding year, 1920
Eastern	1922	9,225	2,683	8,076	1,629	6,004	3,613	70,945	90,978	193,153	.....	.....
	1921	6,764	3,126	42,591	951	5,375	1,871	57,559	70,331	.....	188,568	217,429
Alleghany	1922	2,138	2,490	16,822	4,681	3,155	9,140	51,713	76,196	166,335	.....	.....
	1921	2,480	2,822	48,273	2,194	3,063	6,535	43,937	50,949	.....	160,193	196,502
Pocahontas	1922	185	112	30,514	245	1,544	21	6,450	4,188	43,259	.....	.....
	1921	189	148	24,124	141	1,293	24	5,377	3,708	.....	35,005	33,839
Southern	1922	3,520	2,230	23,033	720	19,625	1,084	37,785	42,783	130,780	.....	.....
	1921	3,197	2,022	18,323	442	14,609	792	35,850	34,509	.....	109,744	124,991
Northwestern	1922	9,601	8,147	6,461	1,608	18,860	36,830	31,044	39,354	151,905	.....	.....
	1921	10,897	8,020	4,882	625	14,039	18,216	26,849	32,163	.....	115,691	152,773
Central Western	1922	10,267	10,946	4,510	227	6,429	2,768	33,972	44,016	113,135	.....	.....
	1921	11,723	9,971	12,959	138	6,167	687	31,417	35,459	.....	108,521	127,581
Southwestern	1922	4,397	2,543	2,720	192	8,465	366	16,135	27,387	62,205	.....	.....
	1921	5,008	2,129	4,155	121	6,077	738	15,604	23,774	.....	57,606	60,621
Total Western Dists.	1922	24,265	21,636	13,691	2,027	33,754	39,964	81,151	110,757	327,245	.....	.....
	1921	27,628	20,120	21,996	884	26,283	19,641	73,870	91,396	.....	281,818	343,975
Total all roads	1922	39,333	29,151	92,136	9,302	64,082	53,822	248,044	324,902	860,772	.....	.....
	1921	40,258	28,238	155,308	4,612	50,563	28,863	216,593	250,893	.....	775,328	.....
	1920	34,425	29,840	188,838	11,011	61,468	71,374	164,693	355,087	.....	.....	916,736
Increase compared	1921	.....	913	.....	4,690	13,519	24,959	31,451	74,009	85,444	.....	.....
Decrease compared	1921	925	.....	63,172	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared	1920	4,908	.....	.....	.....	2,614	.....	83,351	.....	.....	.....	.....
Decrease compared	1920	.....	689	96,702	1,709	.....	17,552	.....	30,185	55,964	.....	.....
June 17, 1922	....	39,333	29,151	92,136	9,302	64,082	53,822	248,044	324,902	860,772	775,328	916,736
June 10, 1922	....	40,035	29,765	94,824	9,008	62,358	46,372	248,405	315,235	846,002	787,283	930,976
June 3, 1922	....	37,931	27,792	86,626	8,927	58,923	31,552	217,254	281,640	750,645	693,903	828,907
May 27, 1922	....	45,712	29,502	91,370	8,851	64,020	23,871	247,331	310,464	821,121	795,335	898,169
May 20, 1922	....	42,772	29,133	81,967	9,335	61,930	16,917	243,971	306,434	792,459	770,991	862,074

The freight car surplus for the period June 8 to 15 showed a further reduction of 15,326, as compared with the preceding week, to 268,863.

THE GENERAL OFFICES of the Western Maryland, in Baltimore, have been moved from the Morris Building to the Standard Oil Building.

Shop Workers' Walkout Scheduled for July 1

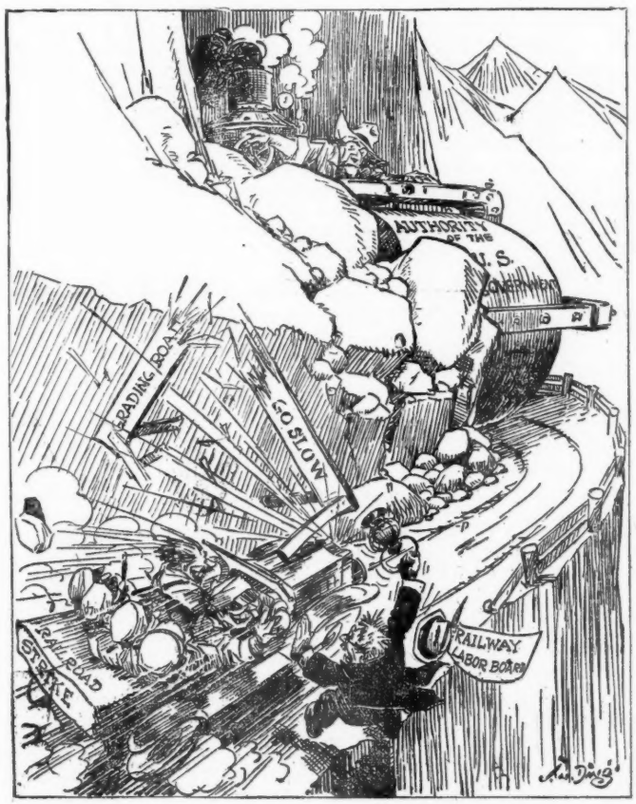
Unless Roads Agree to Restore Old Working Rules, Abolish Contracting and Keep Wages Up

ACCORDING TO A lengthy telegram from B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, to T. De Witt Cuyler, chairman of the Association of Railway Executives, the unionized shop crafts will go out on a strike on July 1—unless the roads will agree to maintain wages at present levels, restore some working rules abolished by the Labor Board and do away with the contracting of repairs. This telegram was received at Mr. Cuyler's office on June 28. Mr. Jewell's telegram follows:

Mr. Jewell's Telegram

Since passage of the Transportation Act a series of controversies between the carriers and their employees have developed a situation wherein today approximately two-thirds of the men engaged in railway service are voting upon withdrawal from employment.

The responsibility for this situation rests squarely upon the Association of Railway Executives, of which you are chairman.



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Slow Down, Dangerous Curve Ahead

This telegram is for the purpose of making clear to you and to all others interested the measure of your responsibility.

1. The Transportation Act provided machinery for negotiations and ready adjustment of disputes regarding grievances, rules and working conditions which the carriers from the outset refused to employ. It provides: "Section 302. Railroad Boards of Labor Adjustment may be established by agreement between any carrier, group of carriers, or the carriers as a whole, and any employees of subordinate officials of carriers or organization or group of organizations thereof." On March 10, 1920, ten days after the Transportation Act went into effect, the 16 standard railroad labor organizations requested the railroad managements to continue the operation of National Boards of Adjustment, but after considerable correspondence this request was refused.

On March 24, and April 5, 1920, the chairman of the Railway Employees' Conference Committee addressed letters respectively to the chairman of the Railway Managements' Conference Committee and to the chairman of the Association of Railway Executives, requesting the continuation of National Adjustment Boards which had successfully functioned previously and were provided for in the Transportation Act. You replied that the association was opposed to the continuation of National Boards.

On July 29, 1920, the chairman of the Railroad Labor Board wrote a letter to the interested parties, directing attention to the above quoted section, which he stated contemplated "as an essential part of the machinery to decide disputes between the carriers and their employees the creation of railroad labor boards of adjustment."

After further discussion and conferences, the Labor Board was notified September 6, 1920, that at a meeting of the Association of Railway Executives, a resolution had been adopted, declaring that the "carriers of the country are unable to agree with the suggestion presented for the formation of National Boards of Adjustment."

Following this, the carriers refused to submit the question of continuing National Boards of Adjustment to the United States Railroad Labor Board, and after submission of the question by the railroad labor organizations, the Labor Board decided on December 7, 1920, that it had no power to "exercise jurisdiction over the question of creation of adjustment boards." Thus, in the beginning of operation under the Transportation Act, the carriers refused to establish what the Labor Board has described as "An essential part of machinery to decide disputes between carriers and their employees." It thus became evident early in the development of the present controversies that the purpose of the carriers in dealing with their employees were, first, to organize managements for national action in support of uniform policies; second, to avoid negotiations with the employees organized likewise for national action; third, to attempt to impose the national policies of management upon local organizations of employees; and fourth, upon the inevitable failure of such unfair methods of negotiation, to throw upon the Railroad Labor Board an unintended and impossible burden of arbitration.

2. Another example of the national program of the carriers was evidenced in their position regarding the national agreements. On April 14, 1921, after a hearing before the Labor Board, a decision was rendered abrogating the national agreements as of July 1, 1921, and referring the negotiation of an agreement relating to rules and working conditions to the carriers and their employees, in accordance with the sixteen basic principles laid down by the Labor Board. In these negotiations on each railroad, the railway executives presented a nationally agreed upon program for the modification of some of the most important rules, upon which agreement with the employees was thus made impossible. The matter was then submitted to the Labor Board, who later issued Decision 222, proposing amendments of Rules 6, 10, 12, 14, 15, 46, and 177, which were not acceptable to the employees.

It will be noted that these proposals of the Labor Board affecting the rules above mentioned were in line with the nationally-agreed-upon program of the railway executives.

3. During proceedings before the Labor Board concerning rules and working conditions, after the carriers had completed their case and before the employees had even had an opportunity to present their case, it will be recalled that Mr. Atterbury in behalf of the railway executives made a peremptory demand for the immediate abrogation of the national agreements, and for an immediate reduction of wages of maintenance of way employees. This demand was shortly followed by a meeting of the Association of Railway Executives, resulting in the presentation by managements of the respective railroads at a uniform reduction in wages to the employees. There was no real attempt made in carrying out this demand to negotiate a wage agreement, but upon the refusal of the representatives of the employees on the different systems to sign on the dotted line, the disputes thus inaugurated by concerted action on a national scale by the railway executives, and which were not submitted for national or even genuine local negotiation, were brought before the Labor Board.

Following the decision in this first wage hearing of 1921, the same procedure was repeated and after further hearings decisions have been rendered within the last sixty days, attempting to impose upon the railroad employees reductions in wages in violation of the principles laid down in the Transportation Act to govern the fixing of reasonable wages. These decisions are not only unjust as amply shown in the minority opinions of the Board, but

are in violation of the requirements of the Transportation Act, and are wholly outside any authority conferred upon the Board. They amount to nothing more than a proposal on the part of six members of the Labor Board, that the employees should accept unjust and unreasonable wages as their acquiescence in the program of the Association of Railway Executives to pay returns on billions of dollars of railway securities, representing no actual investment, and to reimburse the railways for the losses caused by present and past inefficiency in operation and dishonesty in financial management, by denying to the railway employees a fair return upon the investment of their life and labor in the transportation industry.

The railway executives have been able by concerted action to induce six members of the Labor Board to overthrow the precedents of a generation of arbitrations, establishing the principle that the financial obligations of a railroad do not provide a reason for denying to the workers a just and reasonable wage.

The findings of six members of the Labor Board upon the question of wages would make the railways a parasitic industry surviving only by the process of denying a reasonable livelihood to the workers.

You well know that rates of pay, involving wages of 23 cents per hour, $1.84 per day, or $563.00 per year, are not rates of pay bearing the relation "between wages and cost of living" required in the Transportation Act.

Senator Cummins, who was more responsible than any other person for the language of the Transportation Act has stated publicly that it was the intention of the government to provide in the act that railroad employees should under all circumstances receive a living wage, and he has stated that "it is no more right to fix the wage below the point of living and comfortable living than it is to fix a return on capital below a reasonable point."

It is clearly in violation of the intention of the Transportation Act, which provides for a minimum return of 5½ per cent to the owners and provides for a salary of $10,000.00 per year for members of the Labor Board, that the wages of any employee in the railroad industry should be fixed upon so low a basis that he cannot support himself and family in a condition of decent living, make provision for the necessary education of his children and provide against the vicissitudes of sickness and old age.

It is simply impossible to show that the wages sought to be imposed upon the railroad employees through the concerted action of the railway executives meet these requirements.

4. During the progress of the controversies above set forth the various railroad systems—obviously acting pursuant to a prearranged program—have undertaken to contract out from under the operation of the transportation systems, both work and shops wherein work necessary to the operation of these systems is carried on. The two-fold purpose of this procedure has been, and even has been frankly admitted to be:

FIRST: To take the men employed out from under the protection of the railroad labor organizations and to destroy their effectiveness, and,

SECOND: To deny these large groups of employees engaged in the transportation industry from such meager protection as the Transportation Act might afford them.

This program has been in such clear conflict with the purposes of the Transportation Act and such an obvious attempt on the part of the railroads to evade their legal obligations, that the Railroad Labor Board has issued orders specifically holding such contracts so utilized to be void.

Here, the employees have had a vivid demonstration that the management of the railroads will use or violate the Transportation Act as suits their purposes and is to their advantage.

It should be clear that the conduct of the carriers in their relations with their employees as heretofore outlined and as carried on pursuant to the policies determined by the Association of Railway Executives, has operated intentionally to create dissatisfaction among the employees and to hamper their collective efforts simply to maintain reasonable wages and working conditions. A desire has been shown to avoid and discourage the settlement of disputes by negotiation, to create, by carefully planned strategy, sharp differences of opinion and then to carry a program of unconscionable demands before the Labor Board, on the theory that, a compromise decision being the usual product of such a board of arbitration, the managements would be able to deprive the employees of some part of their just dues in each proceeding.

You are also aware as we are, that a minority of enlightened and humane executives of the railway systems have been forced by this proceedure, and by pressure of financial interests, to take part in this national drive against fair treatment of the railway employees. By the refusal at the outset by the executives to permit continuation of boards of adjustment they have been able to force the employees to abandon their natural efforts to negotiate agreements with individual carriers and groups of carriers, and to compel them in protection of their interests to act through national organizations in order to meet on a comparable basis, the national organization of the managements. The system federations, being organizations of the employees of a single railway system, have had complete authority to enter upon and carry through negotiations with the respective railway systems, but the national organization of the carriers has been unwilling to permit in this manner the more humane and enlightened managements to agree upon just and reasonable wages, which would have operated to prevent the establishment of unjust and unreasonable wages elsewhere, which the majority of the executives, under pressure of the financial controllers of the railroads, have desired to impose upon the employees as a part of a nation wide drive against the interests of labor.

The unhappy result of the policies adopted and carried out by the Association of Railway Executives is now made clear in accordance with the laws governing the various organizations of railroad employees involved, it has become necessary to submit to the employees for their own determination, a matter fundamental to their daily life and the well being of themselves and their families,—the question of their willingness to continue to render service.

FIRST: Under the inadequate wages submitted by the action of the Railroad Labor Board, and to become effective July 1, 1922.

SECOND: Under the injust amendments of Rules 6, 10, 12, 14, 15, 46 and 177, proposed in Decision 222 of the Labor Board, and

THIRD: Under the illegal practices of the railroads in contracting out work and shops which have been and are a normal and necessary part of the transportation industry.

The votes of the employees upon these questions show in each instance the decision of an overwhelming majority of the employees to withdraw from the service of the railroads, rather than to continue under these intolerable conditions. It, therefore, becomes the obligation of the representatives of these employees to sanction their withdrawal from employment. The national organization of the executives of the railroads and their concerted action in support of a common program, have forced the employees of the railroads as represented in their several organizations, to co-operate nationally for the protection of their common interests, despite their desire and the expressed purposes of their organizations to preserve negotiations and to bring about agreements between the representatives of management and employees on each railway system so far as possible.

There is, however, one benefit which may come to the carriers and their employees, and to the general public, from the fact that there are national spokesmen of the conflicting interests who might be able to halt a nation wide withdrawal of men from employment in the railway service, if the railway executives sincerely desired to avoid this consequence of their previous course of action. For this reason, in behalf of and by the authority of the executive council of the railway employees' department, I am informing you and through you informing the responsible heads of the various railway systems in the United States, and also the Pullman Company, most of which are represented in the Association of Railway Executives, that unless an immediate arrangement can be made: (1) To continue the payment of the wages at present in force; (2) to restore operation under Rules 6, 10, 12, 14, 15, 46 and 177, as they existed prior to the amendments thereof proposed in Decision 222; and (3) to discontinue the contracting out of work and shops, pending negotiations between the Association of Railway Executives and the Railway Employees' Department, looking toward adjustment of the existing disputes upon these questions, a sanction of withdrawal from employment on July 1, 1922, as voted by the employees, will be unavoidable.

Canvassing the Strike Vote

General committees at Chicago, the headquarters of the Railway Employees' Department of the American Federation of Labor and at Detroit, headquarters of the maintenance of way union have been in session canvassing the strike vote polled among these two classes of employees. Statements emanating from both headquarters are to the effect that the men are voting overwhelmingly in favor of a strike. However, unconfirmed reports indicate that the returns have been coming in rather slowly and that a much larger percentage of the workers are not in favor of a strike at this time than would be indicated by the statements issued by the heads of the organizations involved. These reports have brought forth more emphatic statements from various labor leaders to the effect that the ballots so far tabulated show that approximately the same overwhelming ratio in favor of a walkout is shown on all three of the issues put up to the men—use of the contract system by the roads, abolition of time and one-half for overtime and Sunday work, and the recent wage cut ordered by the Labor Board.

The sentiment prevailing among western railroad officers and about the headquarters of the Railroad Labor Board, is that the present threats of a nation-wide strike are merely repetitions of the strategy employed by railroad labor leaders so often in the past and that when the issues are brought to a head, there will be no general concerted movement although there may be sporadic disturbances which will be entirely local in nature.

Regarding the possible intervention of the Railroad Labor Board, as was the case in the threatened strike of train service employees last October, B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, is quoted as saying:

"The President, through the Railroad Labor Board, stopped the threatened railroad strike of last October. He told the Board to justify its existence. The Board got busy and the strike was called off. If President Harding again tells the Board to justify its existence it will not be able to do so this time because we are going to strike. We have our backs to the wall and we are going to fight."

Board Renders Six Decisions on Contracting

Several decisions, interesting in the light of the threatened strike, were handed down by the Board on June 24. Its decision regarding contracting, rendered recently in the Indiana Harbor Belt case and described in the *Railway Age* of May 13, page 711, is applied to six similar disputes which have been before the Board for some time.

The disputes so decided by the Board include the following:

That between the Chicago Great Western and its shop employees over the leasing of repair tracks at South St. Paul, Minn., to the A. S. Hecker Co., on July 25;

that between the Chicago Great Western and its clerks, foremen, freight checkers, stowers, stevedores and truckers over the contracting of the operation of a freight transfer platform at Oelwein, Iowa, by the A. S. Hecker Co., on October 3;

that between the Missouri, Kansas & Texas and its shop employees over the contracting of the operation of its railway shops at Sedalia, Mo., Parsons, Kan., and Denison, Tex., to the A. S. Hecker Co., in April;

that between the Chicago Great Western and its maintenance of way employees over the contracting of certain extra gang and regular section labor work at rates of pay lower than those established by the Board;

that between the St. Louis, Brownsville & Mexico and its shop employees over the contracting of passenger car cleaning at Brownsville, Tex., on April 1 and;

that between the Indiana Harbor Belt and its maintenance of way employees over the contracting of certain maintenance of way operations to Colianni & Dire.

The details of several of these disputes have been outlined in previous issues of the *Railway Age*.

The reaction of the employees to these decisions is indicated by the comment of John Scott, secretary of the shop crafts organization, who declared:

"The fact that the Board after months got busy and put out these decisions doesn't give us any assurance that contracting will cease."

He thought the decision would not ameliorate the men's grievances.

At the same time Ben W. Hooper, chairman of the Board, issued a statement expressing the belief that the railroads will abide by the Board's decisions in this regard in the future and announcing his intention of calling their attention more firmly to this violation.

"Some of the carriers," he said, "have proceeded upon the assumption that, because they contracted various kinds of labor before the Transportation Act, this practice is still legal and proper. To my mind, it seems so unjust and unfair to employees and so violative of the spirit of the Transportation Act that public sentiment cannot uphold it.

"Of course the Board has not held that the carriers may not contract their work. It has simply held that such contracts cannot have the effect of removing the railway employees from under the application of the Transportation Act. I still believe that the carriers will all get in line with the Board's decisions on this question and it is my purpose to press this matter upon their attention."

Labor Board Opens Hearings on Contracting

On June 26 the Board commenced the hearing of 28 disputes, all involving alleged violations of the Transportation Act and of the orders of the Board through the contracting of shop and maintenance of way work and other similar activities.

The disputes which are now being heard by the Board, the carrier, the organization and the "bone of contention" are as follows:

The New York Central vs. the Federated Shop Crafts, contracting of car repair shops at East Buffalo.

The New York Central vs. the Brotherhood of Railway Clerks, contracting the work of laborers at the Orange avenue freight house and Union depot, Cleveland, Ohio.

The New York Central vs. the American Federation of Railroad Workers, contracting of the Campbell street shop, Toledo, for the repairing of cars.

The New York Central vs. the American Federation of Railroad Workers, the contracting of the work of coach cleaners and of employees in mail and baggage rooms at Toledo.

The New York Central vs. the Brotherhood of Railway Clerks, the contracting of the work of freight handlers at the Franklin street station, New York, Weehawken, Barclay street and St. Johns Park stations to the New York Marine Company, and the Sixtieth street, Thirty-third street stations and Pier No. 83, North River, to Spencer & Sons.

The Indiana Harbor Belt vs. the Federated Shop Crafts, contracting of shop and enginehouse operation at Gibson, Ind.; Blue Island and Norpaul, Ill.

The Chicago Great Western vs. the Federated Shop Crafts, the contracting of shops at Oelwein, Iowa.

The Chicago Great Western vs. the United Brotherhood of Maintenance of Way Employees, the contracting of the work of foremen, mechanics, helpers and laborers in the maintenance of way and structural departments, to the Hecker Construction Company, on March 31, 1922.

The Erie vs. the American Federation of Railroad Workers, the contracting of the work of crossing watchmen, flagmen and trackmen.

The Erie vs. the Brotherhood of Railway Clerks, the contracting of the work of clerical and station forces.

The Chicago & Alton vs. the United Brotherhood of Maintenance of Way Employees, the contracting of coal chute, pump and cinder work, engine watchmen, etc., in the fuel and mechanical departments at various points.

The Wheeling & Lake Erie vs. the American Federation of Railroad Workers, the contracting of wheel room and air brake work at Toledo.

The Cincinnati, Indianapolis & Western vs. the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, the contracting of locomotive hostler work on December 10, 1921.

The Cincinnati, Indianapolis & Western vs. the Brotherhood of Railway Clerks, the contracting of the work of clerical and station forces at Indianapolis.

The Cincinnati, Indianapolis & Western vs. the Federated Shop Crafts, the contracting of shop work.

The Cleveland, Cincinnati, Chicago & St. Louis vs. the Brotherhood of Railway Clerks, the contracting of the work of freight handlers at Indianapolis and other points to the A. S. Hecker Company.

The Cleveland, Cincinnati, Chicago & St. Louis vs. the Federated Shop Crafts, the contracting of the Beech Grove Shops to the Railway Service Corporation on March 20, 1922.

The Michigan Central vs. the Federated Shop Crafts, the contracting of the car repair shop at Detroit to the Illinois Car & Manufacturing Company.

The Delaware, Lackawanna & Western vs. the Brotherhood of Railway Clerks, the contracting of the work of freight handlers and freight check clerks at the Hoboken and Jersey City piers to the New York Marine Company; at East Buffalo to Hanrahan & Co., and at Scranton to Downey Brothers.

The Chicago, Rock Island & Pacific and the Chicago, Rock Island & Gulf vs. the United Brotherhood of Maintenance of Way Employees, the contracting of coal chutes at Courtland, Kan.; Fairbury, Neb. and Lincoln, and a pumping station at South Bend, Neb.

The Atchison, Topeka & Santa Fe vs. the United Brotherhood of Maintenance of Way Employees, the contracting for the painting of buildings, water tanks and bridges, the driving of piles and other bridge construction work, the construction and repair of turntables, right of way fencing, the re-decking of viaducts and other bridge and building department work.

The Bangor & Aroostook vs. the Federated Shop Crafts, the contracting of car shops at Houlton, Maine.

The Boston & Albany vs. the Federated Shop Crafts, the contracting of car cleaning at the Exeter Street Yard, Boston.

The Pere Marquette and the Fort Street Union Depot Company vs. the Federated Shop Crafts, the contracting of the Baldwin Power Plant, April 25, 1921, car repairing at Ionia, Grand Rapids and the Saginaw Shops, and car cleaning at Detroit in March, 1922, to the Kellogg-Grego Railway Service Corporation.

The Western Maryland vs. the Federated Shop Crafts, the contracting of shop work.

The Missouri, Kansas & Texas vs. the United Brotherhood of Maintenance of Way Employees, the contracting of the positions of crossing watchmen at Clinton, Mo., to the mayor of that town.

The Ann Arbor vs. the Federated Shop Crafts, the contracting of shop work.

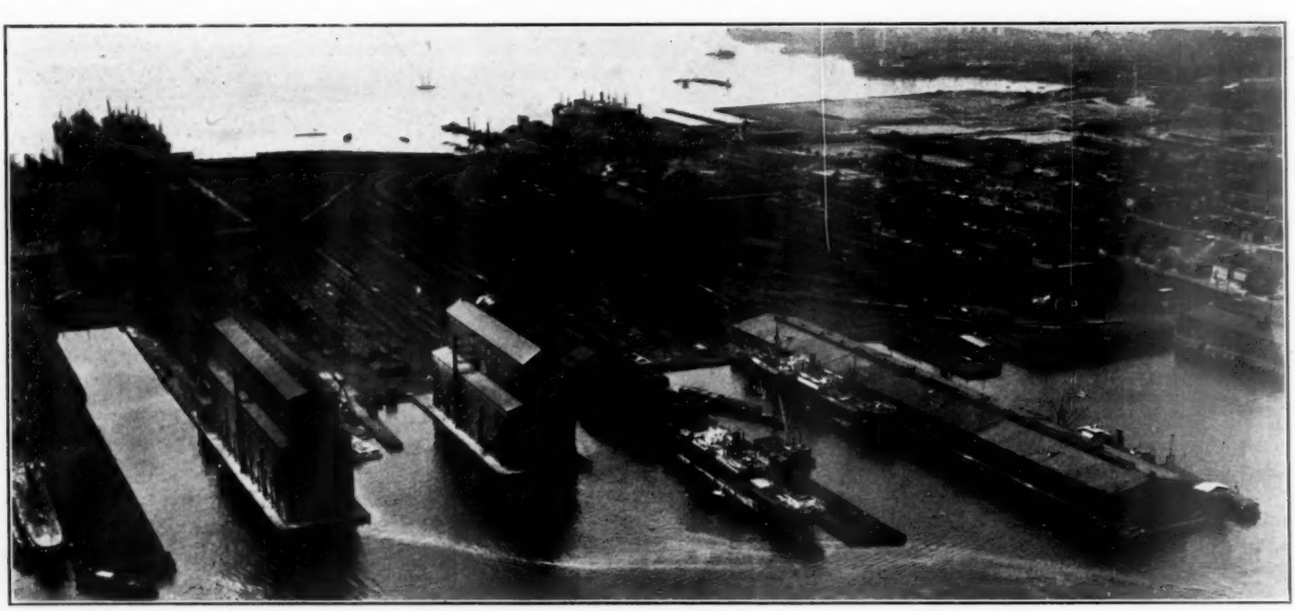
The argument in the first of these cases to be heard by the Board followed very closely the previous arguments which have been made by representatives of both the carriers and the employees in previous and similar contract cases, the employees contending that this contracting constituted a violation of the Transportation Act and of the Board's orders and the representatives of the carriers holding that there is nothing in the act to prohibit the contracting of operations of this character, that it has been the practice of the railroads for many years and that it has been done in the interest of efficient and economical operations.

Pennsylvania's Maintenance and Signal Men Agree to Reductions

The Pennsylvania has reached an agreement with some 42,500 of its employees—signal and telegraph men and maintenance employees—agreeing to a modification of wages "to conform with the lower costs of living, the general conditions of employment throughout the country and the demand of the public for cheaper transportation." The railroad's announcement says in part:

> The negotiations were entirely voluntary and were conducted solely between the management's representatives on the one side, and elected representatives of employees on the other, free from outside intervention. The information on which these negotiations were based was gathered jointly by representatives of the management and of the employees, from industries in the territory served by the Pennsylvania System. The management desires to thank not only the employees and their officers concerned, for the spirit in which the negotiations were conducted, but also the industries along the lines of the system, for their co-operation in furnishing.
>
> This successful outcome of the wage negotiations with the maintenance of way and telegraph and signal employees, constitutes one of the most notable achievements, thus far recorded, by the Pennsylvania Railroad's employees' representation plan. This plan, for the amicable settlement of controversial questions, was first put into effect, by mutual consent, on January 1, 1921. Since that time, and prior to the opening of negotiations over the pending wage revision, the plan has been instrumental in bringing to peaceful and satisfactory settlement, more than 9,000 controversial questions between management and employees.

Although no official announcement has been made as to the extent of the reductions agreed to by the Pennsylvania's employees, it is understood that, in general, they are somewhat less than those ordered by the Labor Board.



An Aeroplane View of the Baltimore & Ohio's Grain Elevators and Freight Terminals at Locust Point, Baltimore, Md.

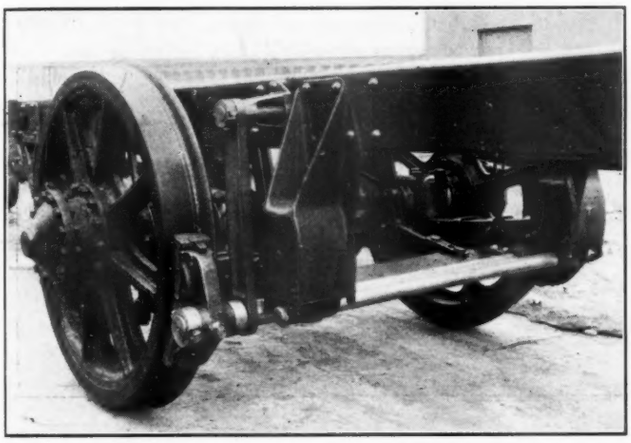
The B. & O. recently established a record for the fast handling of grain through the elevators shown by loading 285,000 bushels of grain into vessels in 13 hours.

Developments in Gasoline Passenger Rail Cars*

New York Railroad Club Discusses Design, Power Requirements and Operating Results of Self-propelled Cars

By W. L. Bean
Mechanical Assistant to the President, New York, New Haven & Hartford

MANY CARRIERS have lines of road which, on account of traffic diversion to trolley lines, or to highway vehicles, or through other causes are unprofitable, while short line railroads are very definitely confronted with a high cost of transportation. Large losses are sustained through operating steam trains, with expenses ranging approximately from 75 cents to $1.50 per train mile and with revenues from 20 cents to $1.00. Expenses mentioned are those for train and enginemen's wages, fuel, lubricants, enginehouse expense and maintenance of equipment. Items of interest on investment, superintendence (including dispatching), maintenance of way, signals, stations, station employees, and kindred items, are not included. Naturally, there are wide differences in the total costs of furnishing service as between different roads or portions of the same road, but when segregation is made of the items accruing to each separate route or schedule, discrepancies between revenues and expenses show that the patrons of the carrier are usually receiving service at less than cost.



Rear Truck Showing Brake Rigging and Spring Pockets

The excess of costs over revenues is such that usually it would be difficult, if not impossible, to handle the business at a profit. Hence the possibility for many carriers seems to be that of decreasing deficits rather than transforming them into surpluses.

There may well be consideration of the desirability of carriers further developing the costs of rendering service on thin lines of road and acquainting the public with the facts, especially with the inauguration of service through the utility of equipment different from that commonly used. The public does not always receive innovations in the best of spirit, consequently, if a clearer understanding of the relation between revenues and expenses could be had, the logic of the situation might appeal. Railroad managements are rightly expected to devise ways and means to reduce transportation costs but they must receive the co-operation of patrons.

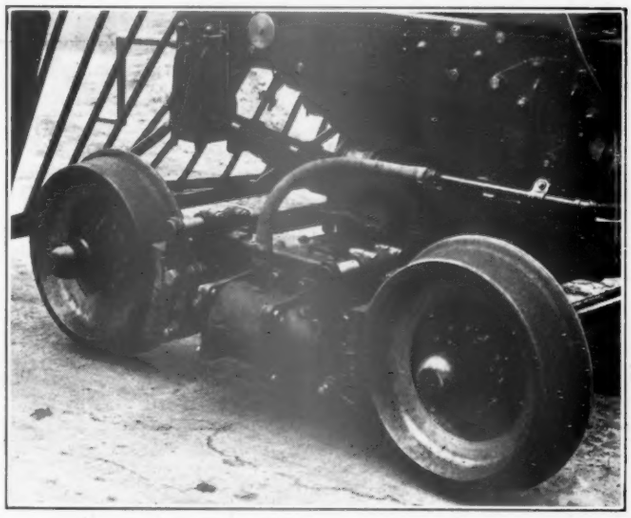
Self-propelled railway cars have been in use for a considerable number of years, but not to wide extent. The subject has received an encourageing impetus recently and if there is progress along right lines, accomplishments should be considerable and of early realization.

The gasoline engine is attracting the widest attention and it appears further development will be chiefly through its use, although light weight Diesel type machines may offer competition and steam is not out of the running.

As in previous developments, two forms of transmission of power from the engine to the wheels and axles are prominent. While gasoline-mechanical drive is at present in the fore-front, there is renewed interest and endeavor to revive the gas-electric system along new lines, embodying lighter construction and less power than formerly used.

Adaptation of Highway Motor Trucks

Adaptation of highway motor trucks to rails has been considerable in extent and with generally satisfactory results. At a reasonable first cost, it is possible to modify a highway vehicle to adapt it to rail use and to produce a reliable piece of equipment which will operate at low cost for fuel, oil, and maintenance. The production of vehicles which stand up under the severe conditions of highway use have favored the operation of similar appliances on rails. Skillfully designed clutches, transmissions, gear shifts, etc.; heat treated alloy steels; efficient systems of lubrication; light weight parts of great strength, durability and flexibility, have worked out well. Furthermore, the extensive use of automotive vehicles for passenger and trucking service has resulted in a wide knowledge of automotive design, construction and operation, thereby making less difficult the adaptation of this equipment to railroad service than would otherwise obtain. Usually the adaptation has been through using the rear pair of wheels to do the driving and substituting a four wheel swivelling truck at front.



Front Truck Showing Direct Acting Brake Cylinder and Cushioned Spring Rigging

Many have been doubtful about the success of a single

*Abstract of a paper read before the New York Railroad Club at New York, May 18, 1922.

pair of wheels operating on rails at speeds necessary for passenger service. It can be stated, however, that the greatest success has resulted and over a sufficient period of time to demonstrate there is nothing to be feared in the trailing of a single pair of wheels under a car of this sort. It is not recommended, of course, that cars be operated at high speed in reverse motion, but it has not come to notice that any difficulty has been experienced in backing six wheel rail cars, the usual backing movement being under speeds of 25 m.p.h.

Advantages in Using Standard Equipment

Equipment of this sort should utilize all possible parts which have been developed and are of minimum weight and maximum strength and durability. The carrier is benefited by the stocks of parts available for quick delivery through the extensive service stations of the manufacturers. Furthermore, the advantage of a stable organization back of the product which is being put into use is important.

In further consideration of the six wheel arrangement, it may be stated that there is no advantage in going to more wheels under a car which can be propelled by existing automotive truck power plants. However, in order to secure acceptable riding qualities in the rear of a six wheel vehicle, it is desirable to have a wheel of a relatively large diameter; namely, 36 in. to 40 in. and arrangements to absorb shocks by rubber or other devices in connection with springs. Special consideration should be given to keeping the unsprung weight to the absolute minimum.

Operating Costs

Cars built on two to three ton chassis have a gas consumption of 8 to 11 miles per gallon and cars built on five ton chassis a consumption of from 4 to 6 miles. The consumption, of course, depends on atmospheric temperature, length of run, loading, grades and especially speed. Maintenance should not exceed five cents per mile on the smaller car or eight cents on the larger one, over a period of time. Other operating and maintenance costs depend on local conditions, particularly as to wages. One man is required for the mechanical operation of the car but whether he can handle the collection of tickets and the performance of such other duties depends altogether on local conditions. First cost of a car of the smaller type is usually around $9,000, and of the larger car around $16,000, depending on the refinements of construction and particularly whether or not the body is built for severe or mild weather conditions.

Depreciation charge rates are not established but a reasonable assumption is that vehicles of this sort can be perpetuated as long as it is desirable to maintain them. The final disposition of these cars probably will be determined from obsolescence rather than physical depreciation, and this will be determined largely by the rate at which manufacturers are able to develop something better than is offered at present.

Cars of Larger Capacity Needed

Development of the present six wheel cars was relatively simple but in designing cars to meet from 50 to 75 per cent greater capacity requirements one is confronted by a different problem. This is unfortunate because, although a considerable field for cars of the six wheel type exists, there is a substantial and persistent demand for larger cars. Six wheel cars are built on the basis of two to three ton chassis, seating about 24 to 28 people, with a nominal baggage space, and cars on the five ton chassis seat about 35 people with a baggage space of approximately 50 sq. ft. There is need for a car which will seat from 50 to 60 people and have a baggage space of about 100 sq. ft. and be able to make speeds of 40 to 45 m.p.h. in either direction. This requirement cannot be met by adaptation of any highway vehicle and requires the design of a new outfit. A double four wheel truck arrangement is necessary because even if a power plant of sufficient capacity were available in a highway chassis, it would not be practicable to operate with a single non-swivelling axle except possibly on exceptional conditions of straight track. Twenty-five feet is about the practicable limit for distance between front truck center pin and rear axle center.

If similar economies are to ensue with the larger car, the same characteristics of construction and weights per horsepower must prevail as in present equipment. A typical rail car weighs 23,750 lb. light; with 35 passengers, two man crew and 2,000 lb. baggage, the weight (at 150 lb. per person) is 31,300 lb. or 489 lb. per brake horsepower. For cars which operate at speeds of 40 m.p.h. on level or nearly level track, the nominal loaded weight per brake horsepower should not exceed 440 lb.

Gasoline propelled vehicles developed a number of years ago were of usual railroad type and experience with them in the consideration of later experience with lighter vehicles, points out the necessity of not following usual railroad equipment types.

Automotive truck manufacturers are the logical agencies for the successful development of the larger cars. These

Chassis of Mack Rail Motor Car

manufacturers, however, appear lacking in confidence that there is a sufficient field of sale of such vehicles to warrant undertaking the expense of engineering development and additional shop equipment necessary to produce on a quantity basis. Anticipation that there will ever be sales of gasoline-propelled rail cars of few enough types to favor manufacture on a quantity production basis in any way approximating the procedure of the automotive industry today, is not sound. It is to be hoped, however, that manufacturers will undertake these larger units on a modified quantity basis; in other words, if these producers could inject flexibility into their organizations and their manufacturing appliances sufficient to meet this demand, it would appear a satisfactory outcome could be expected.

Railroad men have a great variety of ideas as to the characteristics of equipment to suit local requirements of service and it is too much to anticipate that they can soon be brought to close agreement on all points which would favor approximate quantity production. However, the manufacturers could unquestionably develop such separate units as engines, clutches, transmissions, etc., on a quantity basis and with sufficient flexibility as to the arrangements and connections between the several units to meet the varying ideas of individual carriers.

The development of larger, lightly constructed, economical and efficient rail cars, may be retarded by the attitude of the carriers if they misunderstand such facts as the limitations of the power of gasoline engines, relation between weight and power and suitability of the several types of wheel and truck arrangements, etc. Apparently many railroad men cannot think of operation except in trains contain-

ing a multiplicity of units. They have so long been accustomed to couple up a series of cars that when they approach the proposition of transporting a few passengers and a little baggage and mail they endeavor to string the proposition out into two or more cars when there is not revenue enough to support the operation of one car. Those railroad men who attack the problem from this standpoint appear as incorrect in their assumptions as some of the manufacturers who have undertaken the design and construction of single gasoline rail cars having eight wheels where the driving is done on all eight wheels and no contemplation of hauling any trailers is involved. Such excess driving mechanism absorbs power without compensating benefit and is a liability instead of an asset.

Little Need of Trailers at Present

It should not be understood that there are no conditions under which trailer operation may be desirable or that as development progresses, propelling units capable of handling two or more cars may not become available and desirable, but the need at present is a real single unit within the limits of weight carried by two four-wheel trucks.

Rolling friction increases more rapidly as wheels and axles are added rather than through the addition of weight, and for the same total weight on rails the frictional losses are greater than hauling the same weight on fewer wheels.

As the body is lengthened the weight increases at a faster rate than length because of the necessity for sufficient beam strength in the underframing but it is better to have a little more dead weight in a car underframe than to have two units and to add weight through multiplicity of wheels and through the addition of draft gearing for multiple car operation.

The use of trailers furthermore may raise questions in regard to the number of men required in the crew and thereby disrupt estimates with respect of economies versus steam. Under many conditions a train consisting of two or more cars with a seating capacity of perhaps 60 people and with a small baggage compartment, would be unhandy to operate around terminals as compared with the same capacity in a single car, particularly if the single car operated in either direction.

Double end operation is certain to attract increasing interest and there are assurances by some manufacturers that successful double end control mechanism can be applied so that a single car can be operated with equal facility and speed in either direction and therefore be used in the same manner as a trolley car.

Consideration of the expense of self-propelled cars should carry with it the many factors involved, beginning with first cost and the attendant charges for interest on investment, taxes, insurance, depreciation, operation and maintenance. Equipment provided for a given service, therefore, should cost the minimum.

When considering larger capacity cars it should be remembered that weight increases much more rapidly than capacity and that the economies obtained from the use of small cars may not be possible with those of greater size. As the size of vehicles increases, the margin of profit rapidly decreases.

Engines should be so chosen and applied as to reduce vibration to a minimum. Larger cooling surfaces should be provided than are sufficient for the same engines on highway trucks.

Gas-Electric Cars

The gas-electric car is receiving consideration by engineers of two large electrical manufacturing companies in conjunction with car builders, gas engine builders and railway engineers, with the idea of obtaining lighter construction than in former designs. The gas-electric car has a number of advantages over the gas-mechanical drive, one of which is the ease by which double-end operation can be secured and by which power can be transmitted to any or all of the wheels of the car. However, because of the characteristics of gas-electric equipment, it is not possible to use as small an engine as with the mechanical drive.

Final figures from current studies are not available but preliminary values indicate that gas-electric equipment will weigh in the neighborhood of 25 to 50 per cent more per unit of carrying capacity than gas-mechanical. The input-output efficiency of the electric generator multiplied by the input-output efficiency of motors, gives an overall transmission efficiency of about 75 per cent to 80 per cent for the gas-electric, this being the per cent of power delivered from the crank shaft to the rim of the wheels. In mechanical drive of the automotive type, the corresponding efficiency is about 85 per cent.

Furthermore, the combined weight of generator, motors and control apparatus is greater than corresponding parts in a mechanical drive. The combined effect of lower transmission efficiency plus greater weight of machinery reacts on the size of gasoline motor, which reaction increases the weight of body and trucks. It will be surprising if a gas-electric car can be produced which will weigh as little per unit of carrying capacity as a gas-mechanical. Weight, however, is of prime importance in gas-engine design, cost, operation, maintenance, reliability and availability.

Those who have given most study and have had most experience with both the gas-electric and mechanical drive agree, at least on one point, that construction must be light if operation is to be satisfactory. Use of carefully designed parts, heat-treated metals, avoidance of all unnecessary parts, reduction of friction in bearings, in truck parts and from atmospheric resistance is imperative. It is impossible in the space available to go into detail on many points but a few of the details may perhaps be considered profitably.

Details of Construction

The six-wheel design has demonstrated its ability to track well. Because of unsymmetrical wheel arrangement and absence of a swing bolster at one end, cars of this design operate well with lack of lateral oscillation even at speeds in excess of 40 miles an hour on track which is not the best.

Four-wheel trucks with too short a wheel base in conjunction with small wheels do not ride well. It is necessary to keep the wheels in excess of 30 in. and preferable to have a wheel base in excess of 48 in. Experience indicates the wisdom of using shock absorbing devices in connection with the spring arrangement. An efficient hand brake should be provided in addition to the air brake. The air compressor should be of sufficient capacity to supply air for blowing a signal whistle in addition to operating the brake.

The body should be designed to give lightness, ability to withstand vibration without setting up noises, to be of pleasing appearance, to have sufficient strength and to provide protection from the elements. Body construction for cars operating in warm climates, of course, can be much lighter than in the north. Hair felt insulation in walls between the belt rail and the floor and beneath the floor with proper sheet metal protection beneath the latter, has been found helpful in dampening body noises and providing warmth.

Seats should be of light design and because of the character of the service, closer spacings, shorter backs, shorter seats and narrower aisles can be used, providing thereby greater capacity for a given floor area than with the usual passenger coach. Since railway cars can be made wider than street cars, seats can hold three persons on one side of the aisle and two on the other side.

In small cars it is relatively easy to heat through the use of exhaust gases from the motor but in large cars, seating 50 or 60 people, especially if designed for double end operation, it is not an easy problem and it may be necessary to

rely on a hot water or a hot air heater but the provision of electric current for the circulating of the air in the latter case is also not easily arranged in cars having mechanical transmissions.

At speeds above 25 m.p.h. wind resistance absorbs a large part of the power produced. The unit pressure due to wind resistance increases as the square of the speed while the horsepower expended in driving the car against this pressure increases as the cube of the speed.

The continued operation of steam trains to handle 30 or 40 passengers and small amounts of baggage, mail and express, is wasteful and should be supplanted by more efficient equipment. Existing gasoline cars can handle the traffic offered on many light lines but occasional spurts requiring the seating of 60-75 people create a need for a larger car. In many cases, the change from expensive steam locomotive to cheap gasoline car operation, hinges on the production of the larger capacity self-propelled vehicle. The small gasoline cars built on modified highway chassis are exceedingly satisfactory to the extent of their capacity. Surely American engineers can increase that capacity 50 per cent to 75 per cent with corresponding efficiency, reliability and economy of operation. If the carriers and manufacturers get together properly, the problem can be solved and without either party hazarding funds of such extent that they are worth considering in view of the benefits possible.

RESULTS OF OPERATION ON NEW YORK, NEW HAVEN & HARTFORD

Car No.	Total daily miles	Total miles to May 6	Total revenue passengers to May 6	Average passengers per trip: Revenue	Non-revenue	Total	Total trips	Total minutes delay in period	Delay per trip minutes	Number stops per day	Trips replaced by steam train	Number trips per day	Average speed M. P. H.
9000	146	12,441	11,115	20.	8.5	28.5	533	213	0.4	42	3	6	23
9001	59	5,479	6,822	19.6	3.8	23.4	366	340	0.9	12	10	4	25
9002	139	10,396	11,013	39.6	3.6	43.2	301	179	0.6	25	25	4	20

Car	Operating between	In service
9000	Derby, New Haven, and New Hartford, Conn.	January 4, 1922
9001	Fairhaven and Tremont, Mass.	January 18, 1922
9002	Litchfield, Danbury and Waterbury, Conn.	January 30, 1922

Discussion

C. B. Young (general mechanical engineer, Chicago, Burlington & Quincy): A gas-electric car was placed in service on the Burlington in 1902. The gasoline engine was heavy, poorly balanced and not thoroughly developed at that time. As a result the use of the car was abandoned within a year or so. In 1904 or 1905 we purchased a steam car designed by Mr. Toltz, formerly mechanical engineer of the Great Northern. The boiler was of the vertical type with superheater. This car was more or less of a failure due to its heavy weight and insufficient capacity of boiler and engine. A gasoline car which will weigh about 16,000 lb. has been ordered recently from the Edwards Railway Motor Car Company.

In developing motor cars it should be remembered that such cars can never take the place of a small engine and should not be used where one or two trailers are necessary or where switching of freight cars is to be done.

H. P. Edwards (president, Edwards Motor Car Company): As general manager of several short line railroads, I have been experimenting with gasoline-propelled passenger cars for the past seven or eight years. Where conditions are favorable large economies can be obtained by using this method of propulsion. Some short lines, however, do not pay the standard wages prevailing on larger systems and are able to provide steam trains at an operating cost of 50 cents per mile. In such cases there is little incentive to change to gasoline cars. The successful self-propelled passenger car has thus far been of small capacity, not over 50 passengers. Cars seating from 75 to 80 people with a large baggage compartment have been tried but the operating costs are reported to be as high as 90 cents per mile.

F. S. Gallagher (engineer rolling stock, New York Central) told of the development of the gasoline car since it was first tried out in 1891. To meet present requirements he considered a car which would seat 60 to 70 people essential.

C. Lewis Diesterweg (president, Bowen Motor Railways Corporation): There is today a considerable mileage of branch and short line roads built at a heavy expense which does not pay the cost of operation. By changing from steam operation to gasoline motor-driven cars many of these roads could be converted into valuable feeders for the trunk lines which own them. The first car we built was for the Westfield Motor Railway at Westfield, Ill., and is operating on the old Sidell & Olney which had been sold as junk but was bought in three years ago by people along the line and since operated by them. This car has covered some 100,000 miles with practically no care and few replacements. Cars of later design are in service on a number of other roads.

Charles Guernsey (general manager, Service Motor Truck Company): The field for gasoline rail cars is limited by the size of the engines available and the economies of the situation. When cars become of such size and initial expense that the operating costs approach that of steam equipment they cease to have an advantage. For the present cars should be built for a passenger seating capacity of not over 50 or 55 and sufficiently light to be handled satisfactorily by a motor of not over 70 hp.

Dwight C. Morgan (vice-president, Pittsburgh & Shawmut): The cars used on the Pittsburgh & Shawmut were purchased from the Bowen Motor Railways Corporation and were designed along railroad lines, not as a makeshift but as a real substitution for steam passenger coaches. They are popular with the public and have been very satisfactory from an operating point of view. The cost of operation, compiled by I.C.C. classification, has averaged 35 cents per motor car mile as compared with 71 cents for previous steam service.

E. S. French (vice-president, White River Railroad): After thorough investigation we placed in service on our road in Vermont a high pressure steam railroad car made by the Unit Railway Car Company. This car weighs about 60,000 lb. and while the schedule does not call for trailer service, an extra car is frequently hauled. The boiler is designed for 1,000 lb. pressure and uses oil fuel. At present, with fuel oil purchased for 3½ cents per gallon, the fuel cost is about 2.45 cents per car mile and lubricating oil about 0.3 cent. The engine is of the two-cylinder, piston valve type and extremely simple. The power available is more than ample while the flexibility and ease of control are noticeable. After five years' experience we are still convinced that high pressure steam offers the best power for unit cars.

AUTOMATIC TRAIN-CONTROL DEVICES have been ordered by the Interstate Commerce Commission on leading railroads of high traffic density. It has long been apparent that this must come in time. But the latest accident report shows three collisions occurring on lines unprotected or meagerly protected by automatic block signals. The purpose of train control is to prevent disaster when an engineer fails to observe the signals, but on these unprotected lines there are no signals to observe.—*Springfield Republican.*

Freight Claim Division of A. R. A. Meets in Denver

Means of Reaching Goal of Fifty Per Cent Reduction in Claim Payments Principal Topic

THE THIRTY-FIRST annual session of the Freight Claim Division of the American Railway Association was held in Denver, Colo., on June 20-22, with about 175 freight claim and claim prevention representatives in attendance. The principal work before the convention was the consideration of important changes in the freight claim rules. Numerous changes were adopted which are expected to facilitate the investigation and payment of claims. Several rules were also amended to eliminate delays in apportioning paid claims, thus providing for more economical accounting practices.

Freight Claim Prevention Committee Reports

The report of the Committee on Freight Claim Prevention was adopted in full. This report consisted of a detailed discussion of the results that had been accomplished during the past year and a description of the activities in which the committee had been engaged. It said in part:

"In November, 1920, your committee adopted as a slogan 'Cut loss and damage in half—it can be done.' This slogan has been translated into an accomplished fact. The monthly reports of claim payments are now showing a reduction of 50 per cent or more in the freight claim expense under the corresponding months of last year. While the decreased volume of traffic and price deflation were factors in bringing this result about, to a very large extent the improvement reflects increased activities of the railways and their joint agencies in studying and eradicating the causes of claims. It is particularly gratifying to note a reduction of 23.4 per cent in the number of new claims presented in the first quarter of 1922 compared with the same period in 1921, in the face of an increase of approximately 11 per cent in the number of cars loaded in the first quarter of 1922. Also, at the end of the first quarter of this year there were carried over as unadjusted only 229,880 claims, whereas at the end of the corresponding quarter in 1921 there were on hand 408,629 unsettled claims, a reduction of 43.7 per cent.

"For the year 1921 the main efforts of the committee, through its special representatives, were devoted to the encouragement of freight claim prevention organizations on the individual lines where none existed and the stimulation of activities on the part of lines already organized. To this end, the committee's bulletin service was inaugurated, having in mind the dissemination thereby of valuable thoughts and suggestions among all interested. The bulletin service is conducted in five series. One series is called 'Freight Claim Prevention Suggestions' and is addressed to superintendents, copies being sent as information to chief operating, claim prevention and freight claim officers. These contain suggestions as to methods which have been found useful on certain lines and may be found applicable on others. Another series is entitled 'Freight Claim Prevention Suggestion Letters,' and is addressed to general managers, general superintendents and superintendents of transportation, copies being sent as information to claim prevention and freight claim officers. These are issued less frequently than the 'Suggestions' to superintendents and deal more with matters of recommended practice and policy. The third series is designated 'Freight Claim Prevention Bulletins' and is addressed to freight claim and claim prevention officers only. Carried thereby is material of particular interest to those officers and of a nature different from the other series mentioned. A further series is known as 'Crop Condition Reports,' issued from time to time as conditions warrant and is sent to freight claim and claim prevention officers. A fifth series is known as 'Information' bulletins and are addressed to chambers of commerce throughout the United States."

Perishable Freight

"Plans are now being perfected for a national drive against perishable freight irregularities, which for the year 1921 cost the railways approximately $20,000,000. The months of July and August have been set apart for special education work among all employees in perishable freight service, to the end that there shall be a better understanding of tariff and operating rules and that service defects shall be reported promptly to responsible agencies and corrective action taken. The substantial savings which can be effected through expert inspection of fruits and vegetables and fresh meats to determine the true cause of damage—whether by disease, violation of package or loading regulations, etc., or through fault of the carrier, will be emphasized during the campaign; likewise the importance of each road maintaining a perishable freight service department where the volume of such business justifies."

"Figures for 1921 show that approximately $14,000,000 was charged for loss and damage to fruits and vegetables, an average of $18 per car transported, this amount being nearly seven times the amount per car for loss and damage to live stock. Discussions in the territorial conferences developed great need for inspection service at both initial and destination points."

The committee, after carefully considering the views of the territorial representatives offered the following recommendations:

(1) That perishable freight should be given adequate inspection at destination;

(2) That the inspection services of established inspection bureaus, including that of the U. S. Department of Agriculture, be fully utilized so far as available and that such service be extended to cover as much of this traffic as possible when damage is found or reported by consignee;

(3) That damages due to field diseases and other conditions controllable at the source, to improper packing and bracing, or to other preventable causes, shall be reported to the initial lines;

(4) That damages shown to have resulted from transportation or temperature failures en route shall be reported to the line responsible by the carrier whose investigation determines such failures;

(5) That such reports shall be by letter or form, as may be determined upon to meet the individual conditions of each reporting line; but in either case the facts must be fully covered.

(6) That each carrier shall notify the Secretary the title and address of its official designated to handle such reports;

(7) That carrier receiving such reports will investigate same with the view of determining and applying remedial measures;

(8) That, inasmuch as the arrival of perishable traffic at destination in good condition is of general importance, equally affecting the interests of agriculture transportation agencies and the public at large, efforts should be made to co-ordinate the inspection service of the Bureau of Markets, U. S. Department of Agriculture, with the efforts of the transportation lines, to the end that the department shall investigate at their source the conditions such as field diseases, etc., developed in inspection at destination.

On December 7, 1921, a conference was held in New York by the special representatives of the committee with the representatives of the National Association of Finishers of Cotton Fabrics, the New York Textile Bureau and the Converters' Association to discuss ways of reducing loss and damage to cotton piece goods, estimated at $200,000 per annum. Plans were worked out for joint study of the matter by the organ-

izations represented, together with the eastern claim conference and the Trunk Line Freight Inspection Bureau. The convention's attention was also called to the desirability of extending bureau inspection of concealed loss and damage to all cities where the volume of business warrants. This service, the committee felt, has been satisfactorily performed by the Western Weighing and Inspection Bureau at an average cost of 51 cents per inspection and is preferable to individual road inspection because it secures uniformity, is more efficient, and costs less; also it is a distinct advantage in having inspection made by a disinterested organization.

In addition the following subjects came before the committee for consideration and action thereupon during 1921-1922: Improved methods of loading sacked goods to provide better side door protection; damage caused to automobiles by improper bracing; proper strapping for shipping containers; proposed central bureau for reporting over and short freight of unusual character or value; mailing waybills for astray l.c.l. freight; cotton shortages; reducing claims on household goods; co-operation with the American Railway Express Company; damage to fresh meats and packing house products; reducing loss and damage claims on live stock; damage to newsprint paper; wrongful deliveries made on presentation of stolen or forged papers.

Addressed by Retiring Chairman

H. C. Pribble, who has been chairman of the Freight Claim Division for nearly four years, briefly summarized the activities of the division since the last annual meeting. The undertaking of "cutting losses and damages in half" will be realized, he said, if the claim payments figures available for the current year and the revenues for the same period maintain their ratio for the balance of 1922. If so, the claim payments and the ratio will be less than one-half of that of 1921. While the Freight Claim division did not bring the changes which produced these results, he continued, it was the first to have the vision and then promote the necessary work to be done. He also said: "Claim prevention naturally involves many departments of a railroad, hence several of the divisions of the American Railway Association. We will have to be quite circumspect in dealing with these matters lest we presume upon the prerogatives of some other division. It was found that the efforts of several of the divisions were over-lapping and causing some confusion, hence President Aishton called a meeting of the chairmen and secretaries of the divisions on January 31, 1922, with a view to adopting a policy which would reduce these conflicts to a minimum. An advisory council was formed of representatives of all of the divisions, whose duty it is to canvass the activities of all of the divisions and adopt a program of operation to avoid conflicts. Any matter of importance that may come up hereafter and which may involve more than one division will be referred to this advisory council for decision as to how it shall be handled. Of course this refers only to our claim prevention work.

"I know of no way to advance the desired friendship with patrons of the railways more than by prompt and intelligent investigation of freight claims and their adjustment on fair and reasonable lines with our claimants at the earliest possible time. I do not mean to say that we should pay any claims we have not heretofore paid. If our investigation shows we owe a claim, the claimant is entitled to his money promptly. If the investigation shows he is not entitled to the payment, we should be able to convince him in a way that will not lessen his friendship. Our success, individually or collectively, can rest permanently on no other basis than honest, fair and prompt adjustment of our claims with our patrons."

Colonel Dunn Talks

B. W. Dunn, chief inspector of the Freight Container Bureau of the American Railway Association, discussed the problems of that body in one of the most interesting and constructive talks before the convention. "We are asked," he stated, "to make an engineering study of the construction of a container to give it the strength necessary to meet certain destructive forces. We are asked to pass upon the strength of a freight container to carry 100 lb. of freight but we are not told the maximum destructive force that container will encounter in transit. While that service is being performed that container is liable to meet certain destructive forces. If a car is handled in a certain way during transit, forces are going to be generated which will have a tendency to break that container. We know how to test and prepare specifications for a container where it is expected to carry 100 lb. of freight under normal conditions, but what we do not know, is the maximum shock that that freight car is liable to receive."

Fitch Elected Chairman

William C. Fitch, freight claim agent of the Southern Pacific, was elected chairman of the freight claim division for the ensuing year. J. B. Baskerville, assistant general claim agent of the Norfolk & Western, was elected first vice-chairman to succeed H. C. Howe, recently deceased, while J. F. Horrigan, freight claim agent of the Northern Pacific, was elected second vice-chairman to succeed Mr. Fitch. Lewis Pilcher remains as secretary of the division. H. M. Moors, freight claim agent of the Southern Pacific in Louisiana, C. M. MacDonald, freight claim agent of the Boston & Maine, H. C. Pribble, general claim agent of the Atchison, Topeka & Santa Fe and W. B. Kellett, freight claim agent of the Ft. Worth and Denver City were elected members of the general committee. R. L. Calkins, freight claim agent of the New York Central and H. R. Grachau, freight claim agent of Chicago, St. Paul, Minneapolis & Omaha, remain on that committee, their terms having not yet expired. H. B. Bierman, general freight claim agent of the Missouri, Kansas & Texas of Texas, was elected chairman of the Appeal committee, the other members of which are J. J. Hooper, general claim agent of the Southern and J. F. Horrigan, freight claim agent of the Northern Pacific.

It was decided to hold a second freight claim prevention congress in the early fall, the place and date to be determined later by the general committee. It will, however, probably be held in Chicago in either September or October.

Photo from International

Cushions to Make Sleeping in German Day Coaches More Comfortable

Results of Operation of French Railways in 1921

Deficit Reduced About One Billion Francs—Earnings 190 Per Cent Greater Than Pre-War; Expenses, 429 Per Cent Greater

By Marcel Peschaud

General Secretary of the Committee of Management of the Great French Railways

In 1921 a new railway regime, established by the convention of June 28, 1921, was substituted in France for that instituted by the conventions of 1883. Although the law sanctioning this convention was not promulgated until October 29, 1921, and the convention was not ratified by the shareholders of the railway companies until January and February following, the financial organization provided for came into operation with retroactive effect as from January 1, 1921, this date marking the commencement of the fiscal year for the companies.

From the administrative point of view the new regime brings about co-ordination between the managements of the different lines by the establishment of a Committee of Management dealing with all questions of a general nature of common interest, and between the managements and the general interests of the country, by the establishment of a Superior Council, a consultative body, on which have seats, together with the representatives of the lines and of the employees, representatives of general national interests (commerce, industry, agriculture) and also of the great public administrations interested.

The Common Fund

From the financial point of view this co-ordination takes the form of the establishment of a common fund for all the railways, from which each railway may draw sums required to enable it to meet unearned expenses and charges, and to which the prosperous lines are to pay in their surpluses after all their own charges have been met. In principle the equilibrium of this fund is secured by the working of the tariffs; and eventually, if economic circumstances do not allow of the necessary advances in rates, it will be maintained at the expense of the public treasury, the government having requested the companies to make advances to the fund for its account and the companies borrowing the necessary sums for that purpose.

The reports which have just been presented by the Boards of Management of the great private companies to the meetings of shareholders, show what have been the results of the first year of this new regime. It will not be possible to appreciate fully the effects of the Convention until 1922, because, although it came into force as from January 1, 1921, it was not really applied with all its provisions until January, 1922.

The financial position of the French private railway companies in 1921 appears much better than in 1920, in spite of the economic crisis and the drought, which have hampered traffic. In the case of the five large concessionary (private) lines the deficit on the operation account has been reduced from 1,300 million francs in 1920 to 383 million francs in 1921; and the total deficit, in spite of the heavier fixed charges for the loans, was only 1,600 millions in 1921, a decrease of 1,000 millions on the preceding financial year.

It is to be noted that only the concessionary (private) lines are referred to here. The state lines generally do not publish their reports until a year later than the companies.

Issues of Bonds

The issues of bonds by the companies in 1921 were of greater importance than in the preceding years. In the first place, the expenses connected with the purchase of rolling stock, the constructing of new lines and especially electrification, were greater; and, while awaiting the coming into force of the new regime, and under the legal authority given them in 1914, the Nord and P. L. M. companies continued in 1921 the issue of bonds to cover the deficiency for the financial year (653 million francs for the two lines) as these companies, in contrast to the other three large private lines, have ceased to enjoy the guarantee of the state since 1914.

The amount of capital raised by the companies in 1921 was, consequently, the highest attained since they were established. The bonds and debentures sold reached a total of 3,052,000,000 francs. This new capital was distributed as follows among the individual companies:

	Capital realized
Nord	694,000,000 francs
Est	120,500,000 francs
Paris-Lyons-Mediterrean	1,427,500,000 francs
Paris-Orleans	562,800,000 francs
Midi	247,400,000 francs
Total	3,052,200,000 francs

Previous to the war the proceeds of issues did not exceed a total of 400 millions for all the companies taken together. In 1918 the amount increased to nearly 500 millions. In 1919 it reached 1,396 millions and in 1920, 1,062 millions. What an effort was made by the companies in 1921 can be judged from the fact that the figure of their issues exceeded 3,000 millions.

Thus the amount of the bonds issued by the five companies from their establishment to December 31, 1921, reached 21 billions 425 millions. If to this be added the share capital raised (1,318 millions) the figure of 22 billions 800 millions is arrived at, which represents the call upon savings made since their establishment by the only concessionary lines still in existence.

Interest Charges Heavier

Unfortunately, if the issues of the companies were considerably larger in 1921 than in the preceding years, the expenses for interest and redemption were also greater. The minimum rate of interest and redemption for the bonds, which did not exceed 5.5 per cent in 1913, and had risen to 7.5 per cent in 1919 and to 8.5 per cent in 1920, increased to 9.5 per cent in 1921. This progressive increase is the consequence of the general increase in the price of capital.

The desire to take advantage of the coming fall in the rates of interest led the companies to continue in 1921 the issue of short period debentures, repayable in 2, 3, 4 or 10 years. These debentures, on which the companies undertook to pay the taxes, were very favorably received by the public.

On the other hand, the Midi and Orléans companies issued 6 per cent bonds in the United States and the Nord, P. L. M. and Orléans companies have more recently floated loans on the London market, which have had great success, although the rate at which they were issued was lower than that of the last loans floated in France. The subscription lists were open for a few minutes and the amount was subscribed immediately. It can be seen from this that the credit enjoyed by our great companies is as good abroad as in France.

The net capital liabilities (after deduction of the annual

payments due by the state) have increased since 1913 and 1920 as shown by the following table:

NET CAPITAL LIABILITIES (SHARES AND BONDS)

Companies	(In Millions) Net capital liabilities In 1921	In 1920	In 1913	Increase % in comparison With 1920	With 1913
Nord	156.3	226	122	—30%	28%
Est	149	124.6	110	20%	35%
P. L. M.	338.7	327.6	248	3%	36%
P. O	200.3	162.5	146	23%	37%
Midi	104	78.1	67.7	33%	52%
Total	948.3	918.8	693.7	3%	36%

If, in order to make a comparison with the year 1920, there are added for 1921 the payments due by the state, a total of 1 billion 123 millions is arrived at, an increase of 205 millions, or 22 per cent, on the figure for 1920. The charges connected with the share capital have remained perfectly unchanged. The progressive increase in the charges must be ascribed to the bond capital.

During the past financial year the companies continued regularly to insure the retirement of their capital. The number of bonds repaid in 1921 increased, for the concessionary lines, to 340 million francs. If there be added to this figure the retirement of shares (about 15 millions), a total figure of retirement of 355 millions is arrived at. On December 31, 1921, the amount of retirements effected since the establishment of the companies was 5 billions 934 millions of bonds and 300 millions of shares.

Capital Expenditures

Capital expenditures were made for the construction of new lines, for electrification, for various works and for the purchase of rolling stock.

The work of constructing new lines, which was suspended during the war and resumed from 1919 onwards, was continued. On the P. L. M. the work on the line from Nice to the Italian frontier via Sospel, and on the Est the construction of the line from St. Dié to Saales is in progress. On the Midi the work of constructing the trans-pyrenean lines is being actively carried on. The shareholders' meeting authorized the company to advance to the state in 1922 a sum of 36 millions for the covering of the expenditure connected with this work.

During 1921 the electrification programs of the great railway systems entered upon the period of realization. The Orléans, which is to electrify about one-third of its system, submitted to the Ministry of Public Works projects relating to the electrification of the lines from Paris to Orléans and from Brétigny to Dourdan. As regards the other portions of the system which are to be electrified, it has granted the contract for the construction of hydraulic works in the Haute-Dordogne district and obtained an interest in the construction of another hydraulic works, on the Creuse, the work on which has commenced.

The P. L. M. has completed its preparations for the first stage of its electrification program. It contemplates, first of all, the equipment, within a period of four years, of the line from Culoz to Modane, the prolongation of which in Italy is already electrified; then, simultaneously with the electrification of the line from Nice to Coni, in course of construction, that of the Nice suburban section between Cannes and Mentone. On the Midi, which is to be almost entirely electrified, the work is in full progress.

Reconstruction of Destroyed Railway Systems

The reconstruction of the lines destroyed by the Germans may be regarded as accomplished. On the Nord the destroyed constructive works have been finally restored (5 tunnels, 600 rail-bearing bridges and viaducts, 160 over-bridges); as regards railway stations, 353 station buildings and 339 goods sheds have been rebuilt. In the large centres the reconstruction and transformation have been carried out in accordance with the best technical plans. The shunting (switching) stations in particular have been reconstructed with improvements calculated to insure the best results from the labor employed, while at the same time permitting, in proportion as may be necessary, a considerable increase in output. On the Est the work of restoring the destroyed lines is nearly finished. The reconstruction of the great bridges over the Meuse, which had been delayed by the floods, will be completed this year. The same will be the case with the station buildings, the sheds and the gate-keepers' houses which have to be rebuilt.

More Locomotives and Freight Cars Than Before the War

The rolling stock of the companies increased still further in 1921. On December 31 it comprised 14,464 locomotives (as compared with 10,959 in 1913 and 11,333 in 1920) with an output, in round figures, of 14,000,000 steam h.p. (as compared with 11,000,000 in 1913 and 13,000,000 in 1920).

The number of goods wagons increased from about 300,000 in 1913 to 345,000 in 1920 and 367,000 in 1921.

The number of passenger coaches has slightly decreased since 1920 owing to certain lines having discarded coaches the type of which was no longer suited to present requirements, or the renovation of which would have been too expensive.

Because of the decrease in the traffic there is a plethora of rolling stock on the French railways.

Results of Operation in 1921

The gross receipts of the concessionary (private) lines amounted to 4 billions 910 million francs in 1921, an increase of 193 per cent over 1913 and of 10 per cent over 1920. Operating expenses were lower than for 1920 by 8 per cent, amounting to 5 billions 292 million francs; but they are still higher than in 1913 by 430 per cent.

The Est Company alone shows small net earnings; the other companies show deficits. The deficit on operation for all the concessionary lines taken together amounted to 383 millions, distributed as follows:

Companies	Gross receipts (in millions)	Working expenses (in millions)	Net earnings (in millions)	Ratio of working expenses to gross receipts
Nord	984.6	1,059.5	— 74.9	107%
Est	910.1	908.2(2)	+ 1.9	99%
P. L. M.	1,670.8	1,732.4	— 61.6	104%
P. O	923.8	1,094.3	—170.5	120%
Midi	420.2(1)	498.4	— 78.2	118%
Total	4,909.5	5,292.8	—383.3	108%

(1) Net receipts (after deduction of taxes and rebates).
(2) Including the repayment of one-fifth of the proceeds of the increase in the rates (Convention of November 10, 1916).

The deficit from operation amounted in 1920 to 1,927 millions. The decrease in the deficit amounted in 1921 to 913 millions—that is to say, 70 per cent. This decrease is even more important than appears at first sight, because the operating account of the companies is burdened in 1921 with expenses which were payable by the state in 1920, these being the family allowances and the bonuses for the increased cost of living granted to pensioned employees. In 1920 these expenses, taken together, represented a total of about 115,000,000. Taking these into consideration for 1920 the total deficit for that year would be 1,312 millions. The actual decrease in the deficit in 1921 was therefore 1 billion 29 millions. This improvement in the operating results was due both to an increase in the earnings and a reduction of expenses.

The increase in earnings is in part due to the fact that the last advance in rates authorized by the law of February 14, 1920, which brought the total of the increases up to 140 per cent for goods rates and up to 70.75 and 80 per cent (according to the class) for passenger rates, benefited

the whole of the financial year 1921, whereas it affected only the last ten months of 1920. It is further to be ascribed to the general increase in traffic in 1921, especially in passenger traffic, due to the improvements in their service made by the companies. The increase is of importance on the Nord and Est systems above all. In fact, it is upon those systems that the increase in traffic has been greatest.

The receipts for the conveyance of passengers reached 1 billion 233 millions, representing 25 per cent of the total gross receipts. The advance in the rates having been 70.75 to 80 per cent, according to the class, it will be seen that that advance did not lead to a reduction of the traffic, seeing that the receipts from the latter increased by 131 per cent as compared with 1913.

The number of passengers carried exceeded on all the lines the figures for 1913 and 1920. It amounted to about 436,000,000 for the large private companies, as compared with 379,000,000 in 1920 and 388,000,000 in 1913; the increase is 15 per cent as compared with 1920 and 12 per cent as compared with 1913.

Improvements in Passenger Service

The increase in traveling is to a great extent due to the improvements effected by the companies in the train service. The companies have again put into force the sale of collective return tickets to the members of certain associations and have granted fresh facilities for collective family traveling. Furthermore, they have continued to make improvements in long-distance connections. New express trains have been introduced, direct services have been established, for instance, between Strasbourg and Bordeaux, and between Bordeaux, Toulouse and Marseilles. The south express, which had not been running since the war, has been reinstated. To encourage tourist traffic they established joint offices at Brussels, Berne, New York and Rome. With the same object they continued to extend the motor car services in the districts favored by tourists and joined in the establishment of hotels or encouraged the hotel industry in those districts.

At the same time the service became more regular. The number of delays to trains, which had reached 48 per cent after the war, was almost insignificant in 1921, being 2.8 per cent on the Nord system, 1.72 per cent on the Est, 3.17 per cent on the P. L. M., 1.79 per cent on the P. O. and 4.3 per cent on the Midi.

The tonnage conveyed by fast freight trains has decreased somewhat in comparison with 1920. This decrease is partly explained by the reversion to slow-train conveyance for certain classes of traffic, especially as regards the conveyance of animals, which was previously effected by fast train. The receipts of the companies for slow-train traffic amounted to 3 billions 62 millions, an increase of 10 per cent as compared with 1920 and of 224 per cent as compared with 1913. They represent 62 per cent of the total gross receipts.

The increase in the receipts in 1921 as compared with 1920 is, as has already been said, partly due to the fact that the advances in the rates authorized by the law of February 14, 1920, were in force throughout the financial year 1921, while they benefited the financial year 1920 only during 10 months, it is due also to the unification of the goods tariffs which was carried out during the financial year 1921 and brought about certain increases in the rates. It is estimated that the total advance in rates amounts to from 220 to 230 per cent—something very near the increase recorded in the receipts. The latter would have been much greater had it not been for the economic crisis and the drought in 1921.

As regards the lines as a whole, the tonnage carried by slow train was slightly larger than in 1920 (139,900,000 tons as compared with 139,800,000) but it has not yet reached the figure of 1913.

The Nord and Est systems are those which show the greatest increase in tonnage. This is chiefly due to the growing activity in connection with the reparation work in the devastated districts. But these lines are far from having recovered their pre-war traffic in coal and metallurgical products, which came from the mines or works at present undergoing reconstruction.

On the P. O. system the tonnage decreased by 13 per cent as compared with that of 1920, but was still greater than in 1913. On the P. L. M. the tonnage carried by slow train was less than in 1920 or 1913, but the ton mileage was greater by 5 per cent than in 1913.

On the Midi the tonnage carried by slow train was 3.7 per cent less than in 1920 and also less than in 1913.

On these three systems the diminution in the tonnage has been chiefly in minerals and metallurgical products. This shows that the decrease in traffic is caused by the industrial crisis and that when the latter is over the traffic will regain its vigor.

The great lines have taken certain measures to encourage the development of traffic. On the Est the allowances granted on the conveyance of complete train-loads of minerals have been increased. They amount at present to a total of 29.25 per cent for a train of 600 net tons in private 40-ton wagons. The improvement in the working conditions of the great lines has enabled relaxations to be made in the regulations relating to the storage of goods at stations. Since November 1, 1921, the charges for warehousing and standing have been considerably reduced, the reductions for the warehousing of goods varying from 20 to 90 per cent and for standing places from 10 to 50 per cent. The lines are studying the readjustment of tariffs in order to meet the reduction in the value of the goods, and in doing so are endeavoring to give preference to raw materials and long-distance traffic.

Operating Expenses 429 Per Cent Higher Than in 1913

The working expenses in 1921 were 5 billions 292 millions, as compared with 5 billions 758 millions in 1920. In 1913 the expenses amounted to only 999 millions, and in 1921 were still greater than in that year by 429 per cent, whilst the earnings have increased only 193 per cent from 1913 to 1921.

Companies	Working expenses (in million francs)			Increase or decrease in comparison with	
	in 1921	in 1920	in 1913	1920	1913
Nord	1,059.5	1,216	207	—12%	+411%
Est	908.2	896	188	+ 1%	+383%
P. L. M....	1,732.4	1,858	340	— 6%	+409%
P. O.....	1,094.3	1,240	184	+11%	+494%
Midi	498.4	546	80	— 8%	+525%
Total....	5,292.8	5,758	999	— 8%	+429%

The reduction in expenses in 1921 is to a great extent attributable to the reduction in expenditures for fuel, to improvements effected in the service and, in a lesser degree, to the decrease in the cost of the staff.

The decrease in the expenditure for fuel, which amounted to 53,000,000 on the Est system, 153,000,000 on the P. O., 36 per cent of the expenditure for 1920 on the P. L. M. and 30,000,000 on the Midi, is chiefly due to the fall in the price of coal. The average price per ton on the P. L. M., for instance, which was 266 francs in 1920, comes out at 187 francs for 1921; that is to say, 30 per cent lower.* The prices at the end of the financial year were around 150 francs, but that figure is far removed from the pre-war price (30 francs in 1913).

The decrease in the expenditure for fuel is also due to the decrease in the consumption per kilometre of the engines. On the Est system, for instance, the consumption per kilometre of the locomotives was reduced from 24 kilograms in 1920 to 20.6 kilograms in 1921. Likewise, on the P. L. M., the consumption of coal per kilometre, which had fluctuated between 24.5 kg. and 22.5 kg. in 1920, diminished to about

*Figured at the present rate of exchange, these prices for coal were about $26 per ton in 1920, and about $18 per ton in 1921. A franc at present exchanges for about 10 cents in American money.—*Editor.*

20 kg. during the last three quarters of 1921. During 1921 that line continued its experiments for improving the consumption of the locomotives by the utilization of superheating and the pre-heating of the feed water.

The Paris-Orléans completed the fitting-up of the apparatuses for firing with fuel oil (mazout) on three of its locomotives. The runs hitherto made on fuel oil (mazout) have not justified the more extensive use of that method of firing.

Employees Reduced 9 Per Cent

Generally speaking, the cost of the personnel declined in 1921. This decrease is in part attributable to the diminution in the number of employees. The decrease in the traffic on certain lines and the greater experience gained by the employees engaged since the war (thanks, more especially, to the establishment of traffic and transport schools) enabled the lines to discharge a certain number of minor officials and day laborers and to make less appeal to the services of auxiliary labor. The reduction of personnel amounted to nine per cent.

NUMBER OF EMPLOYEES

(Including Auxiliary and Temporary Employees)

Companies	Number in 1921	Number in 1920	Decrease %
Nord	72,444	76,909	5%
Est	65,464	75,326	13%
P. L. M.	103,771	118,577	14%
P. O.	65,490	72,179	10%
Midi	34,705	35,331	2%
Total	341,874	378,322	9%

The number of employees is still greater by 28 per cent than in 1913, because during 1921 the lines continued to suffer under the burdensome effects of the 8-hour day, without having been able to obtain, as they had hoped, a revision of the truly unreasonable conditions of its application to the railways. The additional expenses for materials and staff entailed upon the six great lines by the 8-hour law amount to about 1,100 million francs. That figure represents rather more than half of the total deficit of the lines.

Maintenance Expenses Increased

The expenses for repairs to rolling stock increased slightly in 1921. This increase was due to the measures taken to accelerate the reconditioning of the rolling stock, which had been postponed during the war. It was also due to the important nature of the repairs effected in 1921 to rolling stock which was in a very bad condition, for in 1920 the lines began by repairing the locomotives and wagons which were least damaged so as to be able to recondition a large number of units more rapidly. This work is nearly completed. The expenses for the maintenance of tracks and buildings also increased, for in 1920 they had to be reduced owing to the scarcity of materials. This increase was also due to the energy with which the work of rehabilitating the tracks of certain lines was pushed forward with the object of permitting the running of heavy engines.

To sum up, the earnings increased in 1921 in spite of the crisis which bore hard upon industry and contributed to the decrease in traffic, and there has been a decrease in expenses in spite of the paying off of a considerable amount of arrears left by the war and the taking upon themselves by the lines of the payment of grants to the employees which were formerly paid by the state. The point cannot be too strongly emphasized that these results, which are shown by a decrease in the deficit from operation, were attainable only by means of a continual effort on the part of the managements. If traffic has increased, this is due in the first place to the fact that the companies whose lines had been damaged in the war pushed forward, with the greatest energy, the work of reconstruction which was to enable the districts served by them to carry on a more normal life. It is also due to their having progressively increased the number of passenger trains and encouraged tourist traffic. It is further due to the fact that, thanks to the continuous improvements in their methods of working and the care they have devoted to the organization of a personnel hastily recruited on the morrow of the armistice, they have obtained greater regularity in their passenger and goods services. Finally, they endeavored to effect every possible economy—in the cost of personnel—by reducing the number of employees; in the cost of fuel, by improving its consumption.

The Balance of the Financial Year

If the deficit on the subsidiary services and the capital liabilities be taken into account, the operation of the concessionary (private) lines shows a total deficit of 1,351 million francs in 1921. This deficit no longer falls upon the state, as was the case when interest was guaranteed, but upon the fund established by the Convention of June 28.

Although the accounts of the state railway for the financial year 1921 have not yet been definitely made up (the accounts for the year 1920 have only just been published) it is possible, judging by the credits voted by Parliament on the budget, to estimate the results of operation for the year. They show a deficit on operation of 675 millions in round figures—that is to say, nearly half as great as the deficit of all the five concessionary (private) lines taken together. Thus the operating results for the whole of the French railway systems taken together show a deficit of, in round figures, 2,026 millions in 1921. [At the present rate of exchange this is about $203,000,000.—*Editor.*]

This figure does not include the special war-time compensations (720 francs per official), which were still paid by the state in 1921. The amount of these for 1921 is about 320 millions—namely, 250 millions for the concessionary (private) lines and 70 millions for the state railway system. If these be taken into account the total deficit of the concessionary lines comes to 1,600 millions, as compared with 2,610 millions in 1920; thus the deficit has decreased by 1,000 millions, or 38 per cent. For the whole of the French lines, including the state railway system, the deficit comes to 2,345 millions in 1921, as against 3,530 millions in 1920, there being thus a decrease of 33 per cent.

The "convention" of June 28, 1921, authorizes the institution of a management premium intended to give the companies, and also their personnel, an interest in the development of traffic and in economy in expenses. The premium for the company consists of two elements, both based upon the comparison of the year under consideration with the year 1920. The first is equivalent to three per cent of the increase in the receipts (not including advances in rates). The second is equivalent to one per cent of the decrease in the deficit or, if the receipts exceed the expenses, to one per cent of the total of the surplus and the deficit for 1920. In the case of the Nord and Est systems this ratio has been raised from one per cent to two per cent. If the deficit is greater than for the financial year 1920 the company is subject to a penalty proportional to the amount of this increase in the deficit, to be charged against the premiums for the following years. Generally speaking, the premium granted to the personnel is double that for the company.

For the concessionary lines the premiums thus earned for the financial year 1921 amount to 32,576,000 francs, of which sum 11,326,000 francs goes to the companies and 21,250,000 francs to the personnel. In the case of the state railway system the premium in connection with the first element amounts to 130,800 francs, being 43,600 for the railway and 87,200 for the personnel. As regards the second element, the state railway system not only does not benefit by any premium at all, but is penalized 351,000 francs, which will have to be made up out of the premiums for subsequent years.

The premiums have to be paid out of the joint fund. The latter showing a deficit, the amount of the premiums must be added to the lines' deficit mentioned above. Thus the

total deficit chargeable to the joint fund comes to 2,059 millions, 1,384 millions for the concessionary (private) lines and 675 millions for the state railway system.

Thus, although there is still a deficit, the financial position of the companies shows an improvement as compared with 1920. What are the prospects for the financial year 1922?

In the first place, the increase in earnings is bound up with the resumption of economic activity and that resumption, of which symptoms were thought to be perceptible at the end of last year, is not yet clearly discernible. Furthermore, it is under present circumstances not possible to contemplate increases in the tariffs capable of establishing the financial equilibrium of the lines. On the contrary, the industrial crisis, while contributing to the decrease in traffic, leads to numerous demands for rate reductions being made in the hope that a decrease in the rates for the conveyance of certain commodities or industrial materials would lead to a revival of business. The companies, being desirous of facilitating this revival, have undertaken, in agreement with the public authorities, a revision of the unified tariffs, which had in some cases placed an excessive burden upon certain kinds of traffic and had caused difficulties in certain transactions. Numerous tariffs have already been revised and proposals submitted to the Minister of Public Works; others are being considered. The result of all this revisionary work will be a considerable reduction of the rates which are burdening industry and commerce. It is to be hoped that this will increase traffic and that this increase of traffic will compensate for any losses the railways may suffer.

As regards expenses, the lines will find themselves charged in 1922 with the expenses connected with the allowance to employees for the increased cost of living, amounting to 720 francs, hitherto borne by the public treasury. They will also have to meet the considerable additional expenses resulting from the increases in pensions. On the other hand, there will be a further decrease in the expenses for fuel in 1922; moreover the hope seems justified that there will be a decrease in the cost of personnel owing to a more reasonable application of the 8-hour law.

In spite of all it does not seem that the lines will be able to establish their financial equilibrium, and in 1922 they will again have to resort to borrowing to cover their deficit. It may nevertheless be hoped that this deficit will decrease progressively from year to year, thanks, on the one hand, to the efforts made to develop traffic, and, on the other hand, to the re-establishment of normal economic conditions.

Annual Meeting of Freight Station Section—A. R. A.

Large Attendance—Illuminating Discussions of Many Topics—Inspiring Address by Gen. Atterbury

THE ANNUAL meeting of the freight station section of the American Railway Association was held in Philadelphia, Pa. on June 20, 21 and 22, J. C. Gilmore, chairman of the Section presiding. The members were welcomed to Philadelphia by Robert L. Russell, vice-president of the Philadelphia & Reading and by E. J. Cattell, city statistician. More than 400 members and guests attended the meeting.

Detailed and instructive discussions were held concerning all kinds of freight station activities, but most of the formal action taken was in the shape of resolutions instructing committees how to handle various reports in connection with the parent association. One interesting discussion was that on checking of inbound l.c.l. freight. Descriptions were given of the practice of the Erie Railroad at Cleveland, the Atchison, Topeka & Santa Fe at Kansas City and the Louisville & Nashville at Cincinnati.

Weighing freight loaded into cars from freight houses was discussed at a considerable length. The report on this subject says that probably 90 per cent of the outbound freight houses of the country have no adequate equipment of platform scales, and that at such stations not more than 5 per cent of the freight is weighed. At one station where a count was made for four days it appeared that the consignors had shown the weight on their bills in only 87 per cent of the shipments.

The Committee on Uniform Way Bill has induced the accounting officers' association to make some—but not all—of the improvements which are desired by the local agents. The question of making useful records of the cost of operating a freight house was discussed briefly, but the consensus of opinion was that usually the desired data is not obtainable at reasonable cost; and the subject was dropped. The use of tractors in freight houses was discussed in the same connection. The subject had been studied at length by the committee in charge but here also no cost comparisons could be made with satisfaction, because of the inability to get the records giving all the desired information.

A proposition that a quarterly circular should be issued informing members of the activities of the different committees was warmly approved by the meeting.

Officers. The election of officers of the Section for the ensuing year resulted in the choice of C. M. Teschemaeker (C.&A.), Chicago, for chairman; H. W. Maynard, Jr., (C.N.J.), New York, first vice chairman; and J. R. Hitchcock (A.T.&S.F.), Kansas City, Mo., second vice chairman.

Local Freight Agents as Promoters of Good Relations with the Public

The feature of the meeting on Thursday morning, June 22, was an address by Gen. W. W. Atterbury, vice-president of the Pennsylvania Railroad. Gen. Atterbury said in part:

The work of no other group of railroad men is of greater importance to the welfare of the transportation industry than the work of men in the freight departments. A comparatively new field of public service has in recent years opened up to you—a form of public service of the highest importance. Railroads are regulated by: (1) Congress; (2) Interstate Commerce Commission; (3) State Legislatures; (4) State Public Service Commissions; (5) County Governments; (6) City Governments. Railroad regulation depends upon a well-informed public opinion existing behind all of those regulatory bodies. The railroad problem will never be settled in the courts, for public opinion has its say even after the court of final resort has passed its decision. Our legislators, public utility commissioners and other public officers mean to act wisely. The public in turn means to act wisely and justly. They can act wisely and justly only if they know the true situation.

No other transportation officials, either as individuals or as a group, come into such close contact with the public as do the local agents. None have a better opportunity to cultivate in personal ways a fuller understanding of the railroads and a spirit of co-operation with them in the interest of the common welfare. Here, then, is a new and wonderful field of real service which has opened up to you. To take an efficient part calls for an earnest self-education and a sincere interest—not only a selfish interest in your own welfare but a statesmanlike interest in the welfare of our entire country.

Freight agents are the railroads' "antennae." They are most happily situated to serve as interpreters of the railroad to the

public, and to interpret public sentiment to the railroad men themselves. What shippers think about you is, in most cases, what they think about the railroads. To them, you are the railroads.

The railroads more than any other industry are forced to combat continuously campaigns of misrepresentation, conducted by individuals or organizations whose interests are not those of the public, nor of the employees whom oft-times they profess to lead * * *. I have no quarrel with the man who conscientiously believes in the policy of governmental ownership and operation of the railroads. That is not a moral proposition. But believing, as we do, that the public welfare will be served most efficiently and most economically through private ownership and private operation, under a wise governmental regulation, confined to regulation, we should be remiss in our public duty if we did not inform those with whom we come in daily contact of the reasons for our faith.

This resolves itself, to a large degree, to a question of ways and means. The railroads usually are not well prepared to talk to the men on the street in the simple terms which he understands, and it is this man and members of his family who vote who in the last analysis are back of the governmental policy toward our railroads, and in time their ideas will find their reflection in the laws upon our statute books, and in the decisions of the courts.

The railroad problem to most people means something extremely complex; but the principles underlying the railroad problem may be stated in language simple enough for all to understand. The truth must be learned primarily through statements of the fundamental facts. The public wants to know the facts. There are interests which purposely misinterpret the facts. Not a day passes but that important facts about the railroads are distorted or misrepresented in their presentation to the public.

Every freight agent in the country should feel that it is a part of his duty, first, to educate himself in a proper way about the business in which he is engaged; second, to pass that information on in the countless ways which come to him. The proper handling of this duty is fully as important to his usefulness as the handling of freight. Furthermore, you will find that there is a genuine desire on every hand for information of the kind that you can convey.

There is no other business about which so much can be known. There are no railroad secrets. Every detail can be had for the asking.

Ever since Federal Control, and to some extent before that, a number of so-called economists presuming to speak for the railroad employees of the country have been filling thousands of pages of official records with distorted or misinterpreted facts. As an example—the return which the railroads are allowed to earn is set by governmental authority at a percentage (at present 5¾ per cent) of the property value of the roads as determined by the Interstate Commerce Commission. This is quite different from allowing railroad investors the same percentage return upon their securities * * *. The valuation of the railroads has been under constant attack. The valuation upon which the railroads are allowed to earn a return is determined not by the railroads themselves, but by the government. On this work the government and the railroads have spent more than fifty millions of dollars already.

Again, it is alleged that railroad policies are determined by a small group of banking interests. The fact is that there are more than one and one-half million owners of railroad securities. About thirty million insurance policy holders and about eleven million savings bank depositors have a direct financial interest in the railroads.

There are numerous misapprehensions in relation to wage rates and freight rates. But that is not enough—a great mass of prejudice and ignorance remains. A false picture still abides in the minds of thousands upon thousands. The only way to remove that picture is to substitute a new picture, based upon facts the authority of which can not be questioned and, more important, it must be based upon performance which will tell its own story and paint its own picture.

The railroads must suffer the results of business depression, but the railroads are not in the same catagory as ordinary private business. Their profits are limited by law. Their rates are set by government authority. Their expenses are, to a large extent, determined by government authority. The management has little latitude as compared with ordinary private business in the matter of making money. A private business in times of prosperity may make ten, twenty, fifty or more per cent. It may prepare for the lean years and the years of adversity. The railroads are allowed to do no such thing.

The railroads in the last five years have earned less than four per cent per annum. If railroad facilities are to be increased so that they may meet the demands of the commerce of this country now soon to increase, investments in railroads must be made attractive. This is a very simple situation concerning which there is a great misunderstanding, but which every man in the freight departments of railroads can put before his neighbor or his customer in a way that can not fail to be understood. It is not a matter of railroad selfishness. It is a matter of the public weal.

Outside Contract Repairs to Locomotives Found Justified

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has issued two additional reports on its investigation of the cost f locomotive repairs in outside contract shops, in which it finds justified the resort by the Chicago & North Western to outside shops to obtain classified repairs for its locomotives during 1920, including 35 repaired by the American Locomotive Company, "although apparently for the most part at costs materially in excess of those for similar work in its own shops."

The commission also says that contracts negotiated by the Seaboard Air Line in 1920 with various concerns under which 51 of its locomotives were given classified repairs, although at average costs materially in excess of those for similar work in its own shops, were not found to have been unwarranted.

Commissioner Hall dissented from the finding in both cases for the reasons stated in connection with previous reports, that the proceeding goes beyond the province of the commission and should be discontinued. In the report on the North Western case, the commission says in part:

"In 1919, with the approval of the Railroad Administration, 20 locomotives were sent to the shops of the American Locomotive Company for class repairs, under an estimate made upon inspection, at an average cost of $16,859.30 per locomotive. In December, 1919, an additional ten were similarly forwarded to that company on substantially similar terms. In February, 1920, the regional director approved, subject to the concurrence of the corporate officers, the sending of ten more, and 15 were in fact forwarded. This was done upon a suggestion by wire from the American company that the locomotives be sent without awaiting estimates, which would be promptly prepared and submitted and which it had no reason to believe would not be in line with the estimates covering those sent during federal control; but the bills finally rendered averaged $23,944 per locomotive. Between March and October, 1920, respondent sent 35 more locomotives to the American shops, eight to the Manitowoc Shipbuilding Corporation, and two to the Elgin, Joliet & Eastern Railroad shops, all without bids or contracts. Of the 35 to the American shops, final bills for ten sent in July averaged $27,534 per locomotive, and final bills for the remaining 25 averaged $29,534. The repair cost of the two sent to the Elgin, Joliet & Eastern averaged $12,690, while those of the only two sent to Manitowoc comparable in type with the others averaged $20,857.

"Respondent has refused to pay the bills of the American covering the last 35 locomotives repaired, deeming them excessive, and, in view of the American's refusal to revise the bills, thinks it likely that the matter can be adjusted only by litigation. The dispute appears to involve a total of approximately $500,000.

"The cost of similar work in respondent's shops is computed by the investigators to range approximately from $8,000 to $13,000, depending upon the type of locomotive. However, the record abundantly establishes the critical condition of the respondent's motive power and respondent's inability to cope with the situation in its own shops, and, subject to the possibility that preliminary estimates might have resulted in better terms, fully justifies the resort to outside shops for assistance."

Beginning soon after the end of federal control, the Seaboard entered into various contracts with industrial concerns under which 51 of its locomotives were given class repairs.

at an aggregate cost of $813,424.41. The work performed and the cost thereof were divided as follows: Baldwin Locomotive Works, Philadelphia, Pa., 25 locomotives, $545,974.72; Charleston Dry Dock & Machine Company, Charleston, S. C., nine locomotives, $80,552.28; Merrill-Stevens Shipbuilding Corporation, Jacksonville, Fla., four locomotives, $49,760.13; Southland Steamship Company, Savannah, Ga., six locomotives, $53,681.98; Broadfoot Iron Works, Wilmington, N. C., four locomotives, $48,462.66; and Woodward Iron Works, Birmingham, Ala., three locomotives, $34,992.64. With the exception of the Baldwin plant, the several contract shops were located on respondent's lines, and for the movements thereto and therefrom no freight charges were incurred. The freight charges to and from the Baldwin plant were still in dispute at the time of the hearing, but were estimated to be between $400 and $500 per locomotive, in addition to the foregoing figures. Per locomotive, the Baldwin charges were much the highest. The commission says:

"The shop records indicate that, with the exception of those made at the Baldwin plant, the contract repairs were generally lighter than the same class of repairs made on the same classes of locomotives in respondent's shops, while those at the Baldwin plant were average class 3 repairs.

"During the 26 months of federal control the Railroad Administration expended an aggregate of $438,663 on shop buildings, shop machinery and tools, and engine houses and appurtenances, chargeable to capital account; but the extent to which these expenditures increased the capacity for classified repairs is not shown. Based upon reports to the Railroad Administration and taking 43 locomotives repaired in respondent's shops as contrasted with the figures covering 44 of the 51 locomotives repaired in the contract shops, the average cost per locomotive is shown as $7,156.97 in respondent's shops and as $14,913.79 per locomotive in the contract shops.

"The total cost of the repairs in the contract shops, inclusive of estimated freight charges, material furnished by respondent, and inspection by respondent, is shown as $836,030.27, an average of $16,392.75 per locomotive. The cost of substantially similar repairs on the same classes of locomotives in respondent's shops in the same period is computed to average $7,722.59 per locomotive, on which basis the total excess cost of the contract repairs was $442,178.16, or an average of $8,670.16 per locomotive. The items of cost in respondent's shop are labor and materials, inclusive of shop and store expense, but including no other overhead account, on the ground that respondent's overhead expense remained practically constant notwithstanding the repair of the 51 locomotives outside.

"It was suggested at the hearing that by putting respondent's shops on a nine-hour basis the necessity for sending locomotives to the contract shops might at least have been reduced. The suggestion was answered by testimony on behalf of respondent that certain of the shopmen agreed to work overtime on condition that the same schedule should be followed in all the system shops, and it appears that at the Savannah shop the men declined to work overtime. There is also testimony to the effect that extensive shipyard strikes along the Atlantic coast in the summer of 1920 released large numbers of skilled mechanics who could have been secured by respondent, but this was after all the contracts had been made.

"While there is much detailed evidence of record, the determinative facts are few. There were more locomotives on the line at the end than at the beginning of federal control, which increased respondent's capacity to move traffic, but all were actively engaged and likewise increased the demands upon the shops by so much. This is shown by the larger number in and awaiting shop for class repairs at the later date; and the condition of the motive power necessarily was aggravated by the materially greater gross-ton and locomotive mileage in 1920 than in 1919, due to the increased traffic. The figures submitted tend to confirm respondent's estimate of the maximum capacity of its shops, and the accrued bad-order power was considerably in excess of that capacity at all times in 1918, 1919 and 1920. The figures also indicate that the shops were so fully utilized from the time private control was resumed and the striking increase in traffic on the line began that no substantial increase in the output would have been reasonably possible. While some of the figures are rather close, it does not appear that the awards of the contracts were unjustified."

National Transportation Institute Strongly Endorsed

WASHINGTON, D. C.

THE MOVEMENT FOR the organization of a National Transportation Institute, as an institution under private disinterested auspices to make fundamental studies into transportation and its relationships and to promote education in the processes, methods and relationships of transportation among those responsible for transportation performance, as well as to the general public, is strongly endorsed in letters from leading members of Congress and members of the Interstate Commerce Commission which are being published in pamphlet form by President Bird M. Robinson of the American Short Line Railroad Association. The place for the establishment of such an institution was proposed by Mr. Robinson several months ago and was outlined in his address at the annual meeting of the Short Line Association at Washington on April 25 (*Railway Age*, April 29, 1922, page 1030). The plan has since been recommended by the Joint Commission on Agricultural Inquiry in its report on transportation, which is about to be submitted to Congress, and Edgar E. Clark, formerly chairman of the Interstate Commerce Commission, has consented to be chairman of the board of governors. Those active in the work of organization, in addition to Mr. Robinson, include Sydney Anderson, chairman of the Joint Commission on Agricultural Inquiry, and D. D. Conn, who, as chief of the division of transportation of the Joint Commission, had charge of the transportation part of the commission's investigation. The letters from members of Congress are largely from those who as members of the committees on interstate commerce have been especially interested in transportation affairs.

Would Fill An Imperative Need

In a letter to Mr. Clark, Representative Anderson says:

"I am glad to know that this recommendation is in the process of realization through the proposed creation of a National Transportation Institute. We have just completed a year of investigation of transportation in all its phases, with special reference to its economic aspects and relationships. The outstanding thing which a year of investigation has developed, is that there is no organized body of information touching the economic relations of different transportation agencies to each other, or to agriculture, industry, trade, commerce or finance; nor is there any organized basis of knowledge upon which sound transportation policies can be predicated.

"There is, it is true, a mass of data touching operation, physical valuation, car movement, etc., but almost nothing upon the effect of rates or transportation service upon the movement of commodities, the volume of traffic, or the state of business of the country. There are many problems vitally affecting transportation agencies, shippers and the public, which should be studied from an impartial standpoint on the basis of definitely ascertained fact. No agency today is engaged in research with respect to transportation problems in an economic sense or in organizing the facts of transportation on a basis equivalent to that which has preceded the discovery and application of most of the methods, machinery and organization of modern industry, engineering and science.

"There is very great need for the establishment of an institute

to obtain and organize the facts of transportation in all its relationships and to make fundamental studies from which the process and practice of transportation can be determined and reduced to a definite formula of action. Such an agency would also be a splendid instrument of education, not only of those responsible for transportation performance and regulation, but also of the general public.

"The creation of a National Transportation Institute under thoroughly disinterested, private auspices, would fill an imperative need in a field which so far has scarcely been touched."

Must Be Wholly Disinterested

Chairman Cummins, of the Senate Committee on Interstate Commerce says:

"I assume that the institute is to be wholly disinterested, for it would be of little or no value unless established on this basis. With this understanding I feel free to say that nothing is more needed at this time than an organization having for its purpose the ascertainment and dissemination of the truth respecting transportation. I do not mean the ascertainment of the isolated facts alone but the intelligent and impartial marshalling of the facts in their relation to each other.

"There is no subject upon which the people are so easily misled, no subject upon which misrepresentation or half-truths are so fatal to sound judgment, as that of transportation. I congratulate the people of the country upon your selection as leader of this most worthy undertaking and earnestly hope that the institute will achieve the highest success."

Four Distinct Considerations

Chairman Winslow, of the House Committee on Interstate and Foreign Commerce, in a letter to Mr. Anderson, says:

"From your brief yet most interesting elaboration of the fundamental thought underlying this recommendation I gleaned that your commission had in mind primarily four distinct considerations: First, the desirability of keeping current the statistical data and compilations which the commission has made as one of the results of its study and investigations; second, the need for accurate and reliable data relating to transportation in its broad and comprehensive sense to the end that there may be found a sound basis of fact upon which the various agencies and instrumentalities of transportation may be properly correlated under a broad transportation policy; third, the desirability of more intensive study of the fundamental principles of transportation including those scientific and academic problems which for obvious practical reasons are not within the legitimate scope of the prescribed powers and duties of the Interstate Commerce Commission and other kindred governmental agencies; and fourth, the dominant importance of supplying the means and facilities for educating those who desire to enter the transportation business in some capacity and of informing the public on all aspects of transportation—a thing so vital to their happiness and prosperity.

"I was delighted to learn that this splendid conception already has taken on definite form and that there is now on foot a movement for bringing your purpose to realization through the establishment of a national transportation institute. As I understand it and speaking broadly, this plan contemplates the financing of the institute by private contributions from carriers, shippers and the general public and that the definition of the policies and the direction of the activities of the institute is to be under the authority of a disinterested board of competent, public-spirited governors whose eminence in their respective fields and whose character are beyond cavil.

"During my brief service in the House of Representatives I have been a member of the committee on interstate and foreign commerce. I was a member of that committee during the 66th Congress when we were confronted with the task of providing an adequate transportation system following the termination of federal control. I doubt if the magnitude of that undertaking is yet appreciated even in substantial degree by the American people. The great and ever present difficulty involved was our inability to obtain accurate and indisputable facts. The carriers would submit their contentions, the shippers theirs, and perhaps other special interests would regale us with their views. The net result invariably was that we were forced to resort to compromise concerning the real facts of the problem. Palpably no question can ever be solved properly upon a compromise fact basis. Facts in their essence are truth and truth cannot be compromised. If some means can be provided for the intensive and scientific study of the fundamental principles of transportation and this instruction can be directed by impartial and competent minds, the prime difficulty of meeting the transportation requirements of the nation, so far as legislation is concerned, will largely be met. To be sure, the institute must be kept free of any suspicion of domination by special interests and its instructors must be men of acknowledged authority on the subjects entrusted to them. In the light of your broad experience, it will not be necessary for me to add that it must be kept absolutely free from partisan politics and be cast upon a broad American basis. The great subject of transportation is in no sense political—it is economic—and its proper solution is imperative if the interest of the people is to be the guide. Every man, woman and child in America is a constant consumer of transportation. It enters as an important element into everything we eat, wear, consume or employ. Notwithstanding its basic and fundamental character and its paramount importance to agriculture, industry and commerce, up to this time little or nothing has been done in a definite way to get at the fundamental principles and policies upon which transportation may be developed, fostered, correlated and controlled. Vast sums are appropriated from the federal Treasury for the study of insects, birds, bees and shrubs, which is as it should be and I am not protesting, but we must not overlook this much more important thing called transportation and leave to chance and accident the development of adequate transportation services. With the complexities of modern life ever increasing, with the requirements of the people constantly taking on larger and larger proportions, it is indefensible not to take timely action to meet the radically changed and rapidly changing order of things.

"An institute of the character your commission has in mind will, in my judgment, be the largest single factor in bringing this important work into definite shape and in building for a transportation system which will be adequate not alone to your requirements and mine but which will serve posterity as well."

A Need for Such an Institute

Commissioner Esch, in a letter to Mr. Clark, says:

"In my opinion there is need for such an institute. Its most beneficial purpose would be in the collection of reliable data as to all forms of transportation, the co-ordination of such data and application to the solution of the problems now existing and which may hereafter arise. During my service as a member of the House committee on interstate and foreign commerce there have been occasions when the need of reliable and unbiased information was felt. A transportation institute composed of men of large experience and of highest type and actuated by a zeal to serve the public interest would be of great value, not only to both houses of Congress, but to regulatory bodies state and federal and to the general public. Your large experience in transportation matters and knowledge of the problems which both carrier and shipper have to meet fit you in high degree to perform the duties and meet the expectations of the Transportation Institute. I can assure you that your connection with the institute will be an assurance of its success."

AT EIGHT O'CLOCK every morning, the Canadian Pacific has 36 trans-continental trains on their way across the continent, while at the same time 36 dining cars are serving breakfast. These trains include the "Trans-Canada" which makes the journey from Montreal to Vancouver, 2,885 miles, in 92 hours.

Photo by Kadel & Herbert.

Advertising Its Radio Service

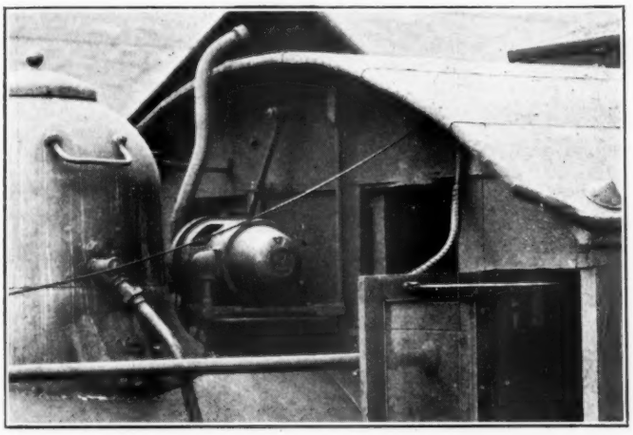
Effect of Design on Headlight Maintenance

Cost of Turbine-Generator Operation Calls for Careful Consideration in Selection of Equipment

By R. Wayne Cargo
Westinghouse Electric & Manufacturing Company

HEADLIGHT TURBINE UNITS seem to be a small item of equipment. The cost is about one fourth of one per cent of the total cost of a locomotive, yet this small part when considered for all the railroads of this country, will aggregate a large amount which is deserving of careful attention.

The following figures will give an approximate idea of the investment and cost of operating these units. It should be borne in mind that these figures are not based on any



The Union Railroad Mounts the Headlight Unit as Shown

actual operating data, but rather are taken as approximate, and are used merely as an example to show what is invested in these installations.

A railroad having one hundred equipments at $125 each, has an initial investment of $12,500. Repair parts should be maintained in stock at all times, to the amount of $15 a unit. This adds to the initial investment $1,500, making the total investment, therefore, $14,000.

The maintenance, including labor on these units, will run from $50 to $100 a year, with say, an average of $75 a year. This will result in an annual maintenance cost of $7,500.

Turbine units will take about 200 pounds of steam an hour, and then to be in use an average of eight hours a day for three hundred days a year, the cost of steam at 50 cents per hundred pounds, will give a total of $24,000 a year for steam on these 100 machines. Including the maintenance cost, the operating cost is, therefore, $31,500 a year on 100 machines. This does not include oil or other minor items.

The performance of most of the units of today does not warrant a life of more than five years. Therefore, depreciation will be at the rate of 20 per cent a year, to which should be added interest on the investment at 6 per cent. Based on the $14,000 initial investment, this makes an addition of $3,640 a year to be added to the operating cost of $31,500. This, therefore, gives a total cost of $35,140 a year for operating one hundred turbine-generator headlight units.

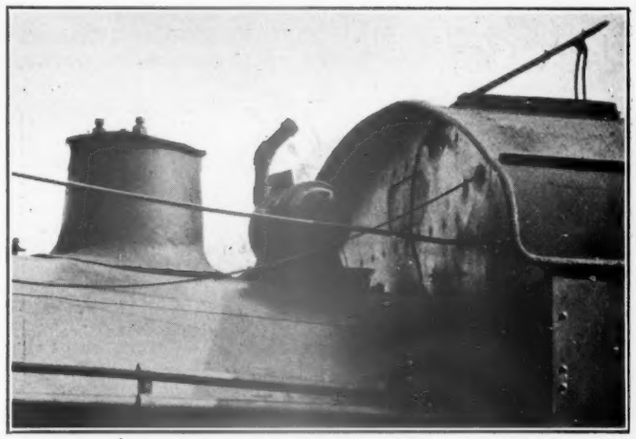
If these figures are extended to take in the thousands of equipments in service, it will result in a very large figure which merits the closest consideration.

One of the first considerations should be: Are these figures justifiable? In view of the performance of large turbine generator units for stationary work, they are not justifiable, even with the allowance made for the wide difference in the class of service. Other equipment on the locomotive includes nothing which would in any way nearly approximate these costs.

The main points to be considered in the selection of the headlight unit should be

1—Reliability
2—Ruggedness
3—Simplicity
4—Efficiency
5—Accessibility for inspection
6—Finish and workmanship.

Greater reliability is necessary in order to cut down the high maintenance charges and repair cost. The unit should not be selected on account of the ease of repair and the extreme accessibility, but rather the frequency of repairs, and cost of repair parts should be the prime consideration. A machine having a great number of wearing and adjustable parts is always subject to frequent adjustment and renewal.



Typical Installation of Headlight Unit on the Buffalo, Rochester & Pittsburgh Railroad Locomotive

These are the items which make up the bulk of maintenance charges.

The class of service to which the headlight turbine-generator is subject is very severe, and calls for the most rugged construction possible. All of the parts should be heavy and well proportioned.

Special attention should be given to the bearings, to see that these are as large as possible, and in fact these should be larger than would ordinarily be called for in other classes of service. The best grade of self-alining ball bearings should be used.

The castings should be heavy to withstand the severe shocks and rough handling in operation. The design should be so arranged that there is no chance of difficulty from temperature or mechanical distortion of the unit. The preferable way would be to have only one bearing fixed in bolting the unit down; the steam and electrical ends of the

unit should be unsupported, and, therefore, the unit would be free to expand, due to temperature differences. The bolting down should be so arranged that the unit would not be distorted when it is secured.

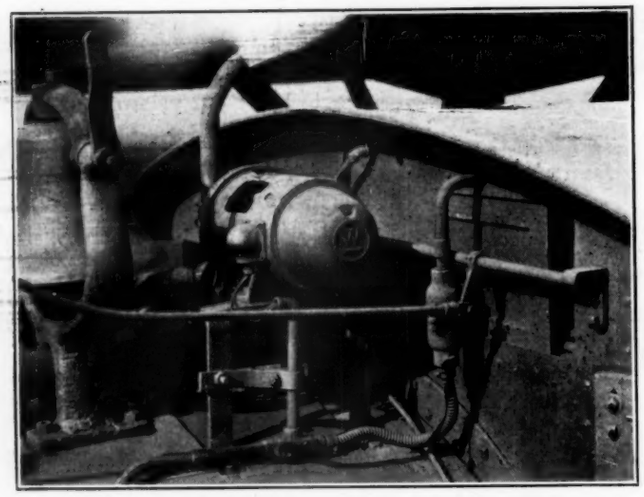
Due to the high rotative speed of the unit, there are heavy centrifugal forces set up. This, therefore, requires extremely heavy armature and turbine rotor. Also these should be of as small diameter as possible. The quill type of construction on the armature is not preferable in this class of apparatus, as the small diameter necessary for ruggedness cannot be obtained.

The turbine rotor should be especially designed to eliminate any distortion from heating or rough handling, as this would quickly put the unit out of balance. There should be enough metal in the rotor to readily obtain perfect balance. Stamped or forged, inserted blades will not lend anything to ruggedness, but rather, take from it. The rotor should be made of steel throughout, as cast iron or sheet iron will not give the desired strength.

Simplicity of design is very desirable. There should be as few parts as possible in the whole unit, and especially the moving parts, which are subject to wear, should be at an absolute minimum. There should be as few adjustments as possible, which is only brought about through simplicity of design.

The governor should be arranged for the minimum number of parts, with the minimum number of adjustments. These parts should be rugged and accurately finished. The governor should be connected to the valve as directly as possible, eliminating all lever mechanism, which tends to stick and wear, and consequently, necessitates adjustment and replacement.

The inlet valve should be simple in design and operation. This part is subject to cutting from the steam, wear from the action of the governor and clogging up from accumulation of scale and boiler compound. There should be no long



One Method of Mounting the Headlight Unit as Used by the Long Island Railroad

valve sleeves or stems which can become clogged with scale or subject to wear, with the consequent steam leakage and poor regulation.

Stuffing boxes on turbine shaft should be as simple as possible and not subject to adjustment. All manner of renewable or adjustable packing should be avoided.

On the generator end the wiring should be all inside of the frame so that connections should not have to be broken when dismantling. Connections from the outside should be made in such a way that the conduits or permanent wiring on the locomotive will not have to be disturbed.

Efficiency is an item which has not usually been given the consideration it deserves. This has been on account of the fact that the first thought has been for reliability. If the unit were operated, which had a steam consumption of 125 pounds an hour instead of 200 pounds an hour, there would be a saving of $90 a year on each unit. This is based on the previous assumption of steam cost and length of operation. When extended to the great number of units in service, $90 a machine is no inconsiderable item. Efficiency, therefore, deserves the fullest consideration, along with the other items.

The units should be accessible only for inspection and not for repair or adjustment. A unit which is totally en-

The Headlight Unit As Mounted on the Pittsburg & Lake Erie Railroad Locomotive

closed is the most preferable, as it eliminates the collection of dust, corroding gases, moisture and oil. While the unit should be enclosed, arrangements should be made for ease of inspection of interior, for trouble. Adjustments, however, should not be especially accessible and should not be many in number. They should be made only by authorized persons who are familiar with the unit, otherwise unauthorized persons are likely to make incorrect adjustments and spoil the operation of the unit. Ease of repair is not of greatest importance but frequency of repairs should be given prime consideration.

Workmanship and finish are items which should receive careful attention. The finish of the individual parts and the way they are fitted together reflect the ability of the manufacturer to turn out a reliable and rugged unit, as well as an efficient one. The finish will usually be the best index to the character of the machine. If the rotor is well made and well finished, there will be higher efficiency obtained. If the governor parts are made of the best grade of material, accurately machined, with the elimination of pins, using in place carefully made knife edges and knife edge blocks, the regulation and operation of this governor will be far superior to one using rough cast parts and pivot pins.

By observing these various points of the machine, giving particular attention to the material and the finish, the purchaser or operator will be furnished with a very good idea of the reliability and efficiency of the machine which is in question.

"Trains Will Run in Kansas," says Governor Henry J. Allen. Asked if he believed the government should interfere in the event of a walkout, he replied: "Surely the men can always strike, but the government should see that the roads are kept running. There will be no tie-up in Kansas. If the men go on strike the roads will be run anyway, and the strikers will not be allowed to interfere. Section 9 of our industrial court law takes care of that."

Annual Meeting of the A. S. T. M. at Atlantic City

THE TWENTY-FIFTH annual meeting of the American Society for Testing Materials was held this year at the Hotel Chalfonte-Haddon Hall, Atlantic City, N. J., on June 26-30 instead of at Asbury Park, N. J., as has been the custom for the past several years. The election of officers for 1922 was as follows: George K. Burgess, chief, division of metallurgy, bureau of standards, Washington, D. C., was elected president; W. H. Walker, vice-president; and D. M. Buck, W. M. Corse, W. K. Hatt and J. R. Onderdonk, members of the executive committee. The meeting was well attended, the registration for the first two days being in excess of 500, considerably more than the previous year.

In the annual address of the retiring president, C. D. Young, general supervisor of stores, Pennsylvania Railroad, Philadelphia, Pa., attention was called to the growth of the society and emphasis was placed upon the fact that this growth was not evidenced until the society had freed itself from the limitations previously existing from the old International Association. He stated that the most characteristic feature of the society was the independence of its members from preconceived notions and arbitrary standards. He brought out that American standards of quality have forced recognition throughout the world, have stabilized production and employment through the broadening effect of increased markets and have made it safer for manufacturers to accumulate stocks during dull periods.

Report on Cast Iron

While revised specifications for cast-iron car wheels were submitted as tentative at the annual meeting of the society last year, the committee has nevertheless continued work on the subject and this year presented a further revision of the car-wheel specifications as the result of this study and the very wide discussion of the cast-iron wheel throughout the country. The standard specifications for foundry pig iron adopted in 1904 and revised in 1909, have been brought up to date by making a few changes found desirable as experience was acquired. New specifications were presented to cover what the committee classified as "high-test" cast iron to include those irons which show higher strengths than the usual run of material. In the production of these cast irons, considerable steel scrap is added to the mixtures, and with a high degree of metallurgical skill the foundryman is able to turn out exceptionally good metal. In order to differentiate this high-grade material from the lower ranges of castings, none the less good in their class, these new specifications have been prepared to enable the consumer of castings to call for a superior article and to give him some assurance that he will get quality of article which he calls for.

Reports on Iron and Steel

The Committee on Steel, among other work, presented the report of the joint committee of the society and the American Railroad Association. This report was given on page 1588 of the June 20 issue of the *Railway Age* June Dailies. A paper by Lawford H. Fry on the Tensile Properties of Steel Castings presented a study of the tensile properties of steel castings of the grades currently used for railroad service. About 600 tests from seven manufacturers were examined, grouped into two series. In the first series the tensile properties as usually determined are compared to show the relation between strength and ductility, and the relation between the yield point and the elastic limit determined by the method for forgings adopted by Committee A-1 on Steel. In the second series methods of greater precision than are applied in commercial testing are used to compare the so-called true elastic limit with the yield point. These tests show that with even a moderate degree of precision in the method of measurement, annealed cast steel is found to behave as a plastic rather than an elastic material and the term "elastic limit" has, as a consequence, little meaning.

Detailed data were presented by Committee A-5 on Corrosion of Iron and Steel bringing the results of the tests on copper bearing and non-copper bearing plates up to date. The data are in the form of numerous tables which give the composition, the percentage of copper, the condition of the plate at various stated periods, etc. The results of the tests conducted at Pittsburgh, expressed in a general form, are indicative of the effect which copper is having on the rate of corrosion. Practically all of the light gage non-copper-bearing sheets in the Pittsburgh test failed after 28 months' exposure, whereas only 6 of the 146 copper-bearing sheets had failed at that time. At the end of 64 months' exposure there still remains two full groups of copper-bearing sheets, as well as 18 other scattered copper-bearing sheets with no failures. The heavy gage non-copper-bearing sheets now show 87 of the total 126 sheets failed, five groups showing entire failures, whereas none of the 132 copper-bearing sheets have failed at this time. This information continues to bear out the conclusions of the 1921 report that copper-bearing metal in the Pittsburgh location shows marked superiority in rust resisting properties as compared to non-copper-bearing metal of the same general composition.

Electrical and Magnetic Weld Testing

This paper by T. Spooner and I. F. Kinnard, research engineers, Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa., desbribes a series, too long to be given here, of laboratory tests applied to arc butt-welded steel plates to determine the possibility of developing electrical and magnetic tests that would be capable of revealing the quality of such welds, the summary of which is as follows: The methods of application consisted in measuring the electrical or magnetic potential drop across the weld with a definite e.m.f. or magnetic potential applied on opposite sides of the weld. This drop was compared with the drop over an equal length of unwelded plate. After completing the electrical and magnetic tests the plates were cut into strips one inch wide at right angles to the welds and these strips tested for tensile strength.

The electrical, magnetic and tension tests showed a very fair general agreement among themselves and with the known quality of the welds as reported by the welder. The electrical and magnetic tests tended to smooth out small local defects, thus giving an approximation of the average quality of the weld over a distance of several inches. In other words, the variations by these tests were not as great as shown by the tension tests but are perhaps just as good an indication of the quality of the weld as a whole.

The electrical and magnetic methods of test show considerable promise, at least as applied to butt-welded plates. A really poor weld will be demonstrated without a shadow of doubt.

By some suitable alterations in the details of the apparatus so as to provide a more rugged portable device there seems little doubt that the methods could be applied commercially, thus greatly increasing the possible applications of electrical and gas welding, since it should be feasible to eliminate poorly welded sections before any harm could result to the completed structure.

Other Reports and Papers

Among the other reports and papers which were presented and are of interest to railway men desiring detailed data are those on concrete and concrete aggregates, timber, fatigue of metals and a symposium on impact testing of materials, etc.

General News Department

Representative Burke, of Pennsylvania, has introduced in the House a resolution authorizing the Railroad Labor Board to rescind its decisions reducing the wages of certain classes of railroad employees, effective on July 1.

Senator Guglielmo Marconi, inventor of wireless telegraphy, is to be the recipient of the John Fritz Medal for 1922. The presentation is to take place at the Engineering Societies' Building, 29 West Thirty-ninth street, New York, on the evening of July 6.

The United States Spruce Production Corporation has sold Spruce Production Corporation Railroad No. 1, extending from Disque Junction to Lake Pleasant, Wash., 36 miles, to Hill, Scritsmeier & Lyon, who propose to use it for logging operations and to operate it as a common carrier.

Samuel Gompers, president of the American Federation of Labor, was re-elected without opposition last week at the convention in Cincinnati, Ohio. It was his 41st election to that office. Portland, Oregon, was chosen as the place for the next convention, which will be held in October, 1923.

Reduction of losses of perishable commodities will be conducted by the Freight Claim Division of the American Railway Association during the months of July and August. During the year 1921 approximately $20,000,000 was charged to the loss and damage account as the outcome of losses and damages to perishable commodities, excluding live stock.

Francis A. Dever, assistant engineer for the Duluth, Missabe & Northern at Duluth, Minn., has been awarded the Strathcona Memorial Fellowship in Transportation at Yale University for the next academic year. Mr. Dever graduated from the College of Engineering and Architecture, University of Minnesota, with the degree of B. S. in C. E. in 1920, and has been connected with the above railroad since his graduation.

B. & O. Wars on Social Diseases

The Baltimore & Ohio Association of Railroad Surgeons at its annual meeting held in Chicago on June 16, decided to inaugurate a campaign of education among its employees to teach them the dangers of contagious and social diseases. Dr. Page Edmunds, of Baltimore, Md., consulting and general surgeon for the system, said: "The Baltimore & Ohio is taking out of its service all persons who may be contaminated and is attempting through propaganda to educate them."

Supplement No. 2 to the 1921 Rules of Interchange

A supplement to the 1921 Rules of Freight Car Interchange has been prepared by the Arbitration Committee and the Committee on Prices for Labor and Materials. This supplement, in addition to interpretations of existing rules by the Arbitration Committee, announces the extensions of the effective dates of certain rules which are to become effective during the year 1922; also labor allowances for R. & R. or R. of Transom Draft Gear and Parts, recommended by the Committee on Prices for Labor and Materials.

A. S. C. E. Elects Dunlap Secretary at Portsmouth Meeting

The American Society of Civil Engineers through its Board of Direction at the annual convention held at Portsmouth, N. H., on January 21 and 22, has elected J. H. Dunlap, professor of hydraulics and sanitary engineering, University of Iowa, Iowa City, Ia., as secretary of the society. Professor Dunlap was born at Harrisville, N. H., on September 9, 1882, and is a graduate of Dartsmouth College. Before entering university work, he spent some time in government reclamation and in railway service. Professor Dunlap succeeds to the office held temporarily by Herbert S. Crocker and E. M. Chandler, respectively acting secretaries since the retirement of Charles Warren Hunt in 1920.

Adjustment of Brake Power on Tank Cars

Request has been received from a majority of the owners and operators of tank cars for an extension of the effective date for complying with the provisions of Circular S. III-11 of the Mechanical Division of the A. R. A., issued May 15, 1919, and the Tank Car Specifications for the Adjustment of Brake Power on Existing Cars. It is stated that this request is due to the general business conditions prevailing for some time and also to the fact that so many of the cars were scattered throughout the country, many of them having been stored on railroad sidings, making it difficult, if not impracticable, for the owners to complete the work in the time limit set.

This request has been granted by the General Committee and the effective date for complying with the requirement of the Tank Car Specifications in the matter of Adjustment of Brake Power on existing tank cars is extended to July 1, 1923.

Looking for Good Men

In connection with their regular work of visiting freight stations for the purpose of supervising the billing and instructing agents, representatives of the claim department of the Southern Railway are under instructions to be on the lookout for local office employees whose work shows that they are worthy of promotion; and to make report of such cases. Already, several local office men have received promotions as the result of recommendations made. This plan is in pursuance of the policy announced some time ago to the effect that wherever possible preference would be given to worthy local office men for promotions in the freight traffic department. Rate classes have been organized at the larger stations all over the system, offering station employees a means of acquiring the training which will fit them to hold more responsible positions.—*Southern Railway Bulletin.*

A Memorial To a Great Explorer

As a tribute to David Thompson, who explored and surveyed a good part of western Canada from 1784 to 1826, the Canadian Pacific Railway, in conjunction with the Hudson's Bay Company, is preparing to erect a memorial building on the shores of Lake Windermere, B. C., where Thompson established the first white man's trading post west of the Rocky Mountains, and made the first accurate records and surveys. The memorial structure will be built in the form of a Hudson's Bay fort with stockades and bastions. It will be used partly as a museum for local Indian relics and antiquities, and partly as a recreation hall for Lake Windermere summer camp. The formal opening of this memorial building is being arranged for September 1, and will be accompanied by an Indian pageant.

Valuation of Telegraph Property

The Interstate Commerce Commission has assigned for argument, in briefs to be filed on or before October 1, questions of law regarding the making of inventories of property used by telegraph companies and by other carriers in connection with its railroad valuations. In the Texas Midland case the commission held that a telegraph line is necessary in the conduct of the business of the carrier and the cost of reproducing the telegraph property was inventoried with that of the railroad. The notice

of the hearing says that the commission is continually confronted with the necessity of determining whether any part of the telegraph property used by any telegraph company shall be inventoried to any common carrier other than that telegraph company in cases where it clearly appears that the property is owned by the telegraph company and also in cases where the matter of ownership has not been agreed upon by and between the carriers who use the property; and the commission desires further light on the questions of law that have been presented from time to time.

Durability of Treated Ties

The annual inspection of more than 25,000 ties in test tracks on 20 divisions of the Chicago, Burlington & Quincy, located in eight states, last fall showed that 88 per cent of the untreated ties in these sections had been removed on account of decay, after 12 years' service in contrast with 1.6 per cent of those treated with creosote, 4.4 per cent of those treated by the Card process (creosote and zinc chloride) and 12 per cent of those treated with zinc chloride. These results were obtained with 20 different species of wood. The results of these tests to date are summarized as follows:

SUMMARY
(Regardless of Species)

	Total ties placed in track	Total removed to date	Percentage removed account decay	Percentage removed account other causes
Straight creosote	3,261	198	1.6	4.5
Card	15,846	2,518	4.4	11.5
Burnett	2,492	629	12.0	13.2
Untreated	3,263	3,106	88.0	7.1

Fuel Savings on the Pere Marquette

A letter by Frank H. Alfred, president and general manager of the Pere Marquette, addressed to all employees who have to do with the handling and consumption of fuel, calls attention to the excellent fuel performance obtained on that road during the month of April. Passenger, freight and switching records for that month show an improvement over March, 1922, and also a better showing than in the same month of 1921. The fuel performance in these periods was as follows:

	April, 1922	March, 1922	April, 1921
Passenger service			
Average car miles per ton of coal	117.30	109.00	111.10
Freight service			
Pounds of coal per 1,000 gross ton miles	144.00	148.87	187.64
Switching service			
Average miles per ton	14.19	13.47	14.21

The increase in the average car miles per ton for April, 1922, over March, 1922, is 7.61 per cent, and over April of last year, 5.58 per cent. In freight service the record shows a 3.29 per cent better performance in April than in March of this year and a 23.26 per cent better showing than for April of last year, this being in part due to the better quality of coal used.

Transportation of Natural Gas Gasoline

The results of a study of the hazards involved in the transportation of natural gas gasoline, made by the Bureau of Mines, in co-operation with the Association of Natural Gasoline Manufacturers and the Bureau of Explosives, are given in a report by D. B. Dow, chemical engineer of the Bureau of Mines, which is now being distributed by the Association of Natural Gasoline Manufacturers, 821 Mayo building, Tulsa, Okla. The investigation was undertaken at the request of the Interstate Commerce Commission.

Several very disastrous explosions and fires have occurred in the shipment of natural gas gasoline. The Ardmore, Okla., explosion of September 27, 1915, in which 47 were killed and 500 injured, was the most disastrous. Shipping regulations designed to prevent such accidents have failed in many cases to accomplish their purpose, and new regulations have been proposed in the hope that accidents may be prevented in the future.

It was found that pressures developed in standard cars were much higher than pressures developed in insulated cars, particularly in summer months. Due to this difference in pressure, insulated cars are desirable for the shipment of natural gas gasoline, not only from the standpoint of safety, but also from the standpoint of economy.

Every effort should be expended in prevention of carelessness in unloading tank cars of natural gas gasoline. The men who have charge of unloading should be thoroughly instructed as to proper methods of procedure and be required to pass examinations as to their fitness for this work.

Railway Consolidation Plan

The Interstate Commerce Commission on June 23 issued a statement saying that during the preceding 10 days the commission had received many telegrams, letters and copies of resolutions from individuals, chambers of commerce, labor organizations, and others, with reference to the recent decision of the Supreme Court affecting the Southern Pacific and Central Pacific railroads. Some ask that the commission seek to have the decree of the Supreme Court withheld; others that it invoke legislation to counteract the effect of the decision. "Manifestly," the statement says, "the commission cannot consider such requests. It is also requested to exercise promptly its powers under the Interstate Commerce Act, particularly the provisions of section 5.

On August 3, 1921, the commission adopted a tentative plan for the consolidation of the railway properties of the United States into a limited number of systems. It said at that time that the tentative plan was put forward in order to elicit a full record upon which the plan to be ultimately adopted can rest. The commission has recently conducted a hearing concerning the carriers in the southeastern region, and its work has been planned in such a way and its engagements are such that hearings with reference to carriers in the west are not likely to be held before October. In the meantime, telegrams, letters and resolutions can be of no assistance to the commission as they cannot be made a part of the record.

"Where the Railroad Has Failed"

This is the title of an editorial of nineteen paragraphs in "The Mutual Magazine" of the Pennsylvania Railroad for June. It reads, in part:

"We are sometimes forced to believe that our railroad organizations are incomplete; that they need experts to expound the virtues of the railroad. The public needs to be told that it costs eight dollars to ship a ton of freight from Harrisburg to Philadelphia by railroad, and *thirty dollars* by automobile.

"The public must be reminded that the railroad goes 300 miles from the city and brings in a supply of milk at a price which every one can afford. . . . This service advertising man needs, also, to tell the employes the great advantages they are enjoying; of the millions their company has voluntarily spent to provide a pension system; of the spirit of helpfulness that is shown at all times by our Relief Department. Our railroad must not be too modest to point to the expense and effort involved in providing easier work when we become incapacitated for our regular jobs; to the great advantages and education we get from a free transportation that enables us to see the country in a way that the men and women of no other industry can enjoy.

"The railroads have done more for the development of our country, generally, and for their employes, especially, than any other industry or institution, and they have suffered most from being misunderstood and misjudged. No matter how good the service or how great its advantages, it will not be appreciated or popular unless constantly referred to."

General Foremen's Convention

The International Railway General Foremen's Association has issued the following announcement of its 1922 meeting:

"The General Foremen's convention, scheduled at Chicago for September 5, 6, 7 and 8, 1922, affords an opportunity for a period of intensive instruction that no general foreman or his superior officer can consistently disregard.

"Held annually at a nearly central point in the United States and at a time of the year that is the most favorable for the average railway shop supervisor to absent himself from his duties, the attendance will comprise a class of energetic, earnest workers who will put vim into their meetings and return to their tasks broadened and advanced in their ideas.

"Insofar as the foreman has been the subject for a great many printed articles showing his acts to be commendable or otherwise, as the spirit of the writer impelled his ideas, it brings out this

Operating Statistics of Large Steam Roads — Selected Items for the Month of April, 1922,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line daily: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany	1922	394	210,167	226,511	26,187	4,370	68.9	205,900	72,031	114	30	20.9	...
	1921	394	220,385	237,696	26,416	4,081	62.9	216,812	81,690	129	28	17.9	...
Boston & Maine	1922	2,455	494,538	547,999	46,124	10,908	71.4	535,098	210,115	318	133	29.5	38
	1921	2,469	489,087	543,926	47,003	10,242	69.4	536,513	223,839	353	107	23.3	71
N. Y., N. H. & H	1922	1,959	406,723	443,817	29,493	10,561	71.0	499,942	196,864	275	83	23.1	17
	1921	1,959	433,899	465,465	27,914	9,734	66.7	506,194	212,045	302	71	19.0	35
Great Lakes Region:													
Delaware & Hudson	1922	887	270,832	361,460	30,228	7,039	63.3	426,629	195,481	283	36	11.4	182
	1921	880	342,539	447,123	30,334	8,240	66.6	558,674	273,965	277	38	12.0	118
Delaware, Lacka. & West'n.	1922	994	393,452	477,931	91,725	12,773	73.2	609,884	246,998	304	60	16.4	74
	1921	995	495,662	605,651	113,703	14,810	67.3	837,989	388,453	305	54	15.0	41
Erie (inc. Chic. & Erie)	1922	2,309	740,282	808,509	43,497	24,017	63.6	1,339,832	545,654	539	226	29.5	119
	1921	2,259	788,251	892,428	36,926	25,109	66.6	1,402,423	687,487	579	137	19.2	127
Lehigh Valley	1922	1,316	463,180	504,936	65,876	12,999	66.4	702,949	296,823	433	123	22.1	176
	1921	1,316	523,374	579,759	55,810	14,542	62.6	897,340	418,206	421	118	21.9	140
Michigan Central	1922	1,827	487,663	498,284	17,462	15,531	64.8	796,465	294,074	316	90	22.1	82
	1921	1,829	414,321	421,184	17,994	12,598	64.4	661,567	271,243	326	93	22.1	106
New York Central	1922	5,675	1,545,556	1,700,504	95,015	55,314	65.1	2,900,389	1,106,661	1,026	568	35.6	333
	1921	5,655	1,498,778	1,638,337	116,823	51,420	63.5	2,913,391	1,230,250	1,089	564	34.1	381
N. Y., Chic. & St. L.	1922	510	308,916	309,978	342	10,418	68.2	514,916	193,677	115	34	22.9	43
	1921	510	312,729	314,061	409	9,360	67.4	479,844	186,286	111	55	33.3	39
Pere Marquette	1922	2,191	324,709	336,826	6,043	8,321	64.2	464,201	207,432	163	51	23.8	11
	1921	2,207	304,180	319,363	6,162	7,803	68.1	371,817	202,114	161	48	22.9	19
Pitts. & Lake Erie	1922	228	84,722	89,089	554	2,230	60.8	148,094	77,090	69	11	14.1	13
	1921	225	68,966	75,880	850	2,226	60.4	157,503	83,836	69	14	16.5	28
Wabash	1922	2,418	537,006	564,513	4,818	14,975	69.8	762,229	301,750	259	72	21.8	25
	1921	2,418	487,970	507,256	6,213	14,190	68.3	753,118	313,268	274	69	20.0	47
Ohio-Indiana-Allegheny Region:													
Baltimore & Ohio	1922	5,235	1,566,257	1,801,643	137,506	39,933	64.1	2,384,772	1,124,598	905	453	33.4	181
	1921	5,185	1,515,880	1,892,092	114,088	36,815	60.9	2,325,703	1,109,839	1,008	427	29.7	196
Central of N. J.	1922	689	209,767	234,926	32,771	4,705	65.2	263,306	118,286	223	38	14.4	49
	1921	679	240,391	266,263	34,920	5,452	60.1	361,798	179,295	194	71	26.7	17
Chicago & Eastern Ill.	1922	945	174,689	174,900	2,147	4,005	65.5	212,806	93,650	125	49	28.3	59
	1921	1,131	191,036	192,034	2,919	4,423	63.4	262,771	128,487	130	46	26.2	54
C., C., C. & St. L.	1922	2,387	568,540	602,121	4,528	16,659	61.8	980,444	435,682	317	139	30.5	36
	1921	2,375	581,477	608,418	1,710	15,084	57.2	963,036	412,843	324	118	26.7	62
Elgin, Joliet & Eastern[1]	1922	459	86,000	95,813	6,191	2,655	68.5	182,789	98,483	91	18	16.3	23
	1921	456	82,202	90,558	6,060	2,394	68.7	169,842	91,361	99	9	8.4	34
Long Island	1922	394	43,662	47,810	8,735	510	57.8	29,533	10,934	38	7	16.0	...
	1921	395	39,767	47,013	6,809	451	60.9	24,403	9,053	34	9	20.8	4
Pennsylvania System	1922	10,882	3,622,453	3,877,105	263,490	97,007	66.0	5,868,709	2,689,140	2,562	873	25.4	796
	1921	10,893	3,406,812	3,698,834	253,912	86,951	62.9	5,857,101	2,912,248	2,720	709	20.7	1,017
Phila. & Reading	1922	1,119	452,064	495,970	54,003	10,702	62.7	668,039	320,069	382	77	16.8	223
	1921	1,119	472,741	534,077	66,568	11,743	61.5	803,837	437,347	348	82	19.1	139
Pocahontas Region:													
Chesapeake & Ohio	1922	2,548	667,442	723,089	16,813	20,280	56.4	1,549,693	821,095	437	108	19.8	76
	1921	2,543	663,409	715,869	18,469	18,289	56.2	1,416,087	750,407	440	110	20.0	75
Norfolk & Western	1922	2,228	860,420	1,037,492	43,657	25,266	57.8	1,984,993	1,095,766	606	96	13.6	174
	1921	2,210	599,817	733,800	24,515	16,472	60.7	1,220,806	656,560	581	106	15.4	235
Southern Region:													
Atlantic Coast Line	1922	4,923	728,460	740,484	11,738	17,511	59.4	927,213	328,019	311	102	24.7	14
	1921	4,887	722,279	725,522	11,621	15,391	58.1	838,499	298,449	294	122	29.3	3
Central of Georgia	1922	1,908	210,067	212,614	4,040	4,780	75.3	232,198	103,289	112	25	18.0	7
	1921	1,908	227,127	228,929	2,457	4,507	67.8	243,078	109,425	115	23	16.7	...
I. C. (inc. Y. & M. V.)	1922	6,137	1,368,876	1,379,283	33,595	37,197	65.6	2,130,533	870,113	752	82	9.8	130
	1921	6,151	1,542,194	1,548,706	34,636	37,764	63.5	2,381,943	1,065,897	746	102	12.0	24
Louisville & Nashville	1922	5,021	1,527,556	1,660,590	62,243	27,302	60.2	1,761,541	823,430	583	94	13.9	11
	1921	5,026	1,383,561	1,466,703	51,929	23,148	59.9	1,482,763	690,367	556	99	15.1	53
Seaboard Air Line	1922	3,537	464,282	472,795	8,552	10,572	65.7	556,001	211,095	192	71	27.1	...
	1921	3,537	422,260	426,294	4,840	8,775	63.1	474,533	177,605	175	85	32.8	...
Southern Ry	1922	6,942	1,277,663	1,301,215	31,217	28,217	67.6	1,447,115	585,436	865	185	17.6	30
	1921	6,942	1,125,014	1,143,239	27,073	23,933	67.3	1,246,083	511,631	906	216	19.3	131
Northwestern Region:													
C. & N. W.	1922	8,376	1,215,788	1,250,128	18,185	25,986	68.2	1,305,565	548,273	803	237	22.7	79
	1921	8,319	1,286,001	1,316,712	19,289	24,742	65.5	1,357,704	584,526	625	331	34.6	22
C. M. & St. P.[2]	1922	11,027	1,331,642	1,370,005	58,394	33,065	63.6	1,800,029	744,814	823	226	21.5	96
	1921	10,618	1,200,146	1,238,637	57,306	28,361	64.0	1,537,809	659,576	786	268	25.4	152
C., St. P., M. & O.	1922	1,726	272,124	290,121	10,692	5,252	73.3	257,883	106,993	151	57	27.4	37
	1921	1,726	263,381	275,874	10,501	4,684	69.1	240,484	98,121	155	53	25.5	38
Great Northern	1922	8,266	657,578	682,844	27,880	18,601	69.1	1,009,495	468,803	615	147	19.3	168
	1921	8,164	631,653	651,268	25,229	16,337	70.8	877,445	421,305	614	177	22.4	280
M., St. P., & S. Ste. M.	1922	4,384	415,482	449,854	6,230	9,522	72.8	462,877	209,175	344	60	15.0	31
	1921	4,225	412,309	416,645	5,652	8,591	68.6	436,910	194,688	346	54	13.5	52
Northern Pacific	1922	6,414	640,242	668,336	42,858	19,157	70.7	1,002,140	451,866	552	158	22.2	99
	1921	6,408	610,976	636,315	41,613	17,286	69.4	944,997	441,230	554	165	23.0	166
Ore.-Wash. R. R. & Nav.	1922	2,166	173,888	195,514	29,090	4,341	73.4	233,908	110,373	115	41	26.3	1
	1921	2,198	177,551	195,397	23,425	4,594	74.1	255,763	128,626	116	46	28.5	11
Central Western Region:													
Atch., Top. & Santa Fe	1922	9,798	1,369,973	1,433,530	64,081	36,591	65.8	2,011,607	734,591	788	158	16.7	216
	1921	9,771	1,464,640	1,553,854	67,208	39,809	62.6	2,111,520	761,575	809	160	16.5	158
Chicago & Alton	1922	1,010	245,247	247,758	3,983	5,095	63.7	286,249	116,983	107	55	33.7	13
	1921	1,010	292,557	297,818	3,601	5,925	60.4	363,853	154,768	127	42	24.8	21
Chic., Burl. & Quincy	1922	9,326	1,241,331	1,293,286	63,229	32,241	67.6	1,732,589	759,693	713	243	25.4	90
	1921	9,326	1,340,756	1,398,889	62,916	34,142	63.0	2,040,957	952,652	700	258	26.9	139
Chic., Rock Isl. & Pacific	1922	7,662	1,132,535	1,145,177	10,094	24,820	66.6	1,298,656	510,741	611	144	19.1	90
	1921	7,662	1,178,516	1,190,502	10,925	24,090	64.5	1,329,013	550,613	558	179	24.3	40
Denv. & Rio Grande West'n.	1922	2,593	188,733	232,991	45,096	4,199	69.5	235,766	112,114	229	79	25.7	38
	1921	2,593	166,133	204,455	37,053	3,640	68.8	205,299	98,641	223	86	27.8	62
Oregon Short Line	1922	2,360	262,070	274,732	21,333	6,352	67.8	369,607	166,336	169	59	25.8	43
	1921	2,359	260,087	268,115	16,586	5,783	68.1	344,036	166,205	184	45	19.7	51
Southern Pacific	1922	6,983	916,415	1,050,864	176,477	27,064	66.6	1,529,358	621,568	545	209	27.7	42
	1921	6,975	978,186	1,125,722	222,071	25,494	62.5	1,509,274	599,972	537	227	29.7	49
Union Pacific	1922	3,665	638,527	648,408	34,759	21,588	77.3	1,038,154	426,011	396	135	25.4	158
	1921	3,615	662,755	672,300	31,356	20,898	73.4	1,097,503	485,272	393	158	28.7	114
Southwestern Region:													
Gulf, Colo. & Santa Fe	1922	1,895	187,265	195,799	4,064	4,784	66.6	267,286	115,358	129	20	13.4	34
	1921	1,895	252,423	256,733	4,876	6,032	64.8	348,995	157,561	90	56	38.4	...
Missouri, Kans. & Tex.	1922	1,658	212,977	213,100	5,088	5,805	60.6	324,954	124,898	140	39	21.7	69
	1921	1,710	219,614	219,940	5,930	5,534	61.6	314,592	128,431	131	47	26.4	48
Mo., Kans. & Tex. of Tex.	1922	1,738	185,765	190,795	3,737	3,582	58.8	209,219	78,275	85	54	39.0	17
	1921	1,740	209,778	214,139	1,898	4,085	58.1	248,602	99,884	101	47	31.9	22
Missouri Pacific	1922	7,315	931,888	941,757	28,295	22,653	69.6	1,215,218	526,206	412	172	29.4	2
	1921	7,263	1,003,875	1,010,447	26,744	22,470	68.3	1,269,213	574,851	381	178	31.9	28
St. Louis-San Francisco	1922	4,761	755,579	765,155	11,324	13,995	64.3	789,584	329,007	346	99	22.3	30
	1921	4,761	717,566	727,479	12,258	12,364	65.0	708,247	307,481	338	151	30.9	45
Southern Pacific Lines (in Texas and Louisiana)[3]	1922	3,710	544,224	545,650	4,827	11,292	65.6	662,062	292,922	192	92	32.5	14
	1921	3,647	527,371	530,411	3,505	9,965	61.0	612,964	263,748	172	115	40.1	1
Texas & Pacific	1922	1,953	208,525	208,525	1,416	4,906	64.1	267,866	102,145	122	73	37.2	28
	1921	1,952	272,498	272,498	3,808	5,789	63.8	324,853	126,785	118	76	39.0	18

[1]No passenger train service.

Compiled by the Bureau of Statistics of the Interstate Commerce Commission. Subject to revision.

Compared with April, 1921, for Roads with Annual Operating Revenues above $25,000,000

Region, road and year	Average number of freight cars on line daily: Home	Foreign	Total	Per cent unserviceable	Stored	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car-miles per car-day	Net-ton miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotive and tender	Passenger service: Train-miles	Passenger-train car-miles
New England Region:														
Boston & Albany.....1922	3,566	4,503	8,069	6.9	915	980	343	16.5	298	26.2	6,095	207	290,834	1,887,399
1921	3,442	4,409	7,851	6.7	1,078	984	371	20.0	347	27.6	6,912	204	306,682	1,939,864
Boston & Maine.....1922	16,908	13,146	30,054	18.8	1,775	1,082	425	19.3	233	16.9	2,852	159	775,980	4,240,230
1921	17,814	13,537	31,351	18.7	4,717	1,097	458	21.9	238	15.7	3,022	157	839,921	4,424,126
N. Y., N. H. & H.....1922	24,749	14,835	39,584	24.9	1,730	1,229	484	18.6	166	12.5	3,349	168	960,264	6,038,777
1921	24,469	15,887	40,356	17.0	3,028	1,167	489	21.8	175	12.1	3,608	173	1,037,818	6,443,292
Great Lakes Region:														
Delaware & Hudson.....1922	11,383	6,282	17,665	7.5	4,059	1,575	722	27.8	369	21.0	7,347	201	184,313	948,612
1921	11,309	5,735	17,044	8.7	2,381	1,631	800	33.2	536	26.6	10,373	195	185,875	951,293
Delaw'e, Lacka. & West'n.1922	18,439	6,167	24,606	10.4	936	1,538	623	19.3	335	23.7	8,283	182	476,022	3,404,712
1921	16,861	6,813	23,674	9.3	955	1,691	784	26.2	547	31.0	13,019	173	479,606	3,446,633
Erie (inc. Chic. & Erie)..1922	39,225	15,861	55,086	18.1	9,731	1,810	737	22.7	330	22.8	7,876	151	652,557	4,671,699
1921	39,011	14,626	53,637	15.3	16,131	1,893	872	27.4	427	23.4	10,146	151	661,430	4,948,977
Lehigh Valley 1922	32,581	7,871	40,452	11.2	11,106	1,518	641	22.8	245	16.1	7,516	183	339,072	2,641,504
1921	31,572	9,788	41,360	14.7	3,620	1,715	799	28.8	337	18.7	10,590	161	355,767	2,652,544
Michigan Central 1922	18,454	11,422	29,876	18.3	239	1,633	603	18.9	328	26.7	5,367	127	529,304	4,713,869
1921	19,147	10,649	29,796	15.4	2,472	1,597	655	21.5	303	21.9	4,942	128	556,851	4,769,008
New York Central.....1922	82,955	40,754	123,709	18.7	10,552	1,877	716	20.0	298	22.9	6,500	128	2,271,766	18,226,756
1921	89,932	48,149	138,081	10.4	38,006	1,914	821	23.9	297	19.5	7,252	125	2,272,325	17,732,476
N. Y., Chic. & St. L.....1922	4,912	4,995	9,907	7.8	1,356	1,667	627	18.6	652	51.4	12,653	112	84,508	543,209
1921	6,445	4,566	11,011	14.4	2,251	1,534	596	19.9	564	42.0	12,170	116	89,005	532,219
Pere Marquette 1922	11,135	10,610	21,745	13.2	833	1,430	639	24.9	318	19.9	3,156	127	234,520	1,201,569
1921	10,903	9,861	20,764	14.2	1,000	1,222	665	25.9	325	18.4	3,052	162	280,123	1,368,844
Pitts. & Lake Erie.....1922	20,094	8,181	28,275	38.2	1,236	1,748	910	34.6	91	4.3	11,274	82	106,971	544,606
1921	17,373	6,987	24,360	13.9	2,743	2,284	1,216	37.7	115	5.0	12,441	89	108,118	565,236
Wabash 1922	13,128	9,282	22,410	11.8	808	1,419	562	20.2	449	31.9	4,160	166	540,215	2,864,717
1921	13,039	9,160	22,199	11.0	914	1,543	642	22.1	470	31.2	4,319	161	508,429	2,627,692
Ohio-Indiana-Allegheny Region:														
Baltimore & Ohio.....1922	71,022	33,128	104,150	14.5	11,966	1,523	718	28.2	360	19.9	7,161	188	1,412,175	8,893,198
1921	69,967	27,878	97,845	12.1	6,414	1,534	732	30.1	378	20.6	7,135	183	1,342,466	8,495,894
Central of N. J.....1922	20,219	8,027	28,246	5.9	9,942	1,255	564	25.1	140	8.5	5,723	206	319,636	1,542,346
1921	20,458	8,596	29,054	29.5	4,478	1,505	746	32.9	206	10.4	8,808	193	311,724	1,465,664
Chicago & Eastern Ill....1922	16,938	2,682	19,620	14.2	8,679	1,218	536	23.4	159	10.4	3,303	180	210,372	1,392,275
1921	17,239	3,063	20,302	9.5	8,188	1,376	673	29.0	211	11.5	3,787	181	231,849	1,473,984
C., C., C. & St. Louis....1922	17,866	16,498	34,364	16.1	5,973	1,724	766	26.2	423	26.2	6,085	133	676,778	4,237,080
1921	19,023	15,537	34,560	11.2	3,621	1,656	710	27.4	398	25.4	5,793	140	709,041	4,547,638
Elgin, Joliet & Eastern[1]..1922	9,595	5,543	15,138	9.3	396	2,125	1,145	37.1	217	8.5	7,147	139	(1)	(1)
1921	10,468	3,970	14,438	4.5	3,952	2,066	1,111	38.2	211	8.1	6,673	149	(1)	(1)
Long Island 1922	2,125	4,376	6,501	3.9	193	676	250	21.4	56	4.5	925	387	184,675	1,028,692
1921	2,151	3,557	5,708	3.8	980	614	228	20.1	53	4.3	765	434	189,358	1,008,575
Pennsylvania System.....1922	211,420	73,748	285,168	12.5	52,224	1,620	742	27.7	314	17.2	8,238	150	4,795,152	31,670,290
1921	215,683	66,993	282,676	7.5	88,696	1,719	855	33.5	343	16.3	8,912	145	4,897,356	32,186,885
Phila. & Reading.....1922	23,988	12,220	36,208	5.6	3,850	1,478	708	29.9	295	15.7	9,531	182	472,629	2,183,856
1921	27,644	11,095	38,739	10.2	5,877	1,700	925	37.2	376	16.4	13,032	182	512,254	2,317,968
Pocahontas Region:														
Chesapeake & Ohio.....1922	37,591	11,577	49,168	13.6	212	2,322	1,230	40.5	557	24.4	10,742	132	424,087	2,350,302
1921	38,252	11,838	50,090	8.2	9,550	2,135	1,131	41.0	499	21.6	9,835	134	427,885	2,427,132
Norfolk & Western.....1922	31,011	8,138	39,149	5.0	862	2,307	1,274	43.4	933	37.2	16,396	160	379,980	2,364,617
1921	37,664	5,919	43,583	8.0	9,197	2,035	1,095	39.9	502	20.7	9,903	168	378,324	2,329,900
Southern Region:														
Atlantic Coast Line.....1922	22,244	11,608	33,852	13.8	...	1,273	450	18.7	323	29.0	2,221	126	814,142	5,772,580
1921	22,392	11,016	33,408	15.5	...	1,161	413	19.4	298	26.4	2,036	145	841,045	5,920,071
Central of Georgia.....1922	4,459	3,515	7,974	15.8	...	1,105	492	21.6	432	26.5	1,805	149	307,658	1,608,411
1921	4,996	3,792	8,788	23.7	...	1,070	482	24.3	415	25.2	1,912	160	311,410	1,562,112
I. C. (inc. Y. & M. V.)..1922	46,428	18,747	65,175	9.2	11,600	1,556	636	23.4	445	29.0	4,726	147	1,505,586	10,141,609
1921	47,777	17,183	64,960	8.1	11,351	1,545	691	28.2	547	30.5	5,776	143	1,457,936	9,085,445
Louisville & Nashville....1922	36,524	14,958	51,482	11.1	85	1,153	539	30.2	533	29.4	5,466	169	1,015,157	5,918,129
1921	38,530	14,170	52,700	22.7	117	1,072	499	29.8	437	24.4	4,578	167	904,134	5,135,687
Seaboard Air Line.....1922	13,159	11,600	24,759	31.9	...	1,198	455	20.0	284	21.7	1,989	168	590,749	3,537,439
1921	11,544	8,445	10,989	21.5	...	1,124	421	20.2	296	23.2	1,674	181	576,745	3,358,856
Southern Ry.....1922	37,901	21,893	59,794	17.6	...	1,135	458	20.7	326	23.3	2,811	163	1,252,850	7,207,874
1921	39,614	20,326	59,940	10.3	7,341	1,108	455	21.4	285	19.8	2,457	205	1,319,232	8,095,064
Northern Region:														
C. & N. W.....1922	46,828	22,963	69,791	7.5	4,700	1,074	451	21.1	262	18.2	2,182	190	1,525,182	9,316,379
1921	48,274	21,803	70,077	8.1	7,000	1,056	455	23.6	278	18.5	2,342	205	1,613,599	9,642,837
C. M. & St. P.[2].....1922	51,130	22,571	73,701	15.3	...	1,352	559	22.5	337	23.5	2,252	166	1,401,289	8,443,590
1921	44,909	16,288	61,197	12.4	5,633	1,281	550	23.3	359	24.1	2,071	171	1,437,736	8,650,519
C., St. P., M. & O.....1922	3,799	10,459	14,258	11.0	1,906	948	393	20.4	250	16.8	2,066	172	301,368	1,610,643
1921	3,933	11,742	15,675	11.3	4,163	913	373	20.9	209	14.4	1,895	190	312,750	1,744,372
Great Northern 1922	45,186	5,196	50,382	14.7	...	1,535	713	25.2	310	17.8	1,890	164	953,022	5,541,979
1921	46,724	7,398	54,122	14.9	...	1,389	667	25.8	259	14.2	1,720	177	968,931	5,672,123
M., St. P., & S. Ste. M..1922	18,840	5,569	24,409	12.8	2,353	1,114	503	22.0	286	17.8	1,591	130	416,984	2,256,149
1921	17,138	6,275	23,413	12.2	3,524	1,060	472	22.6	277	17.8	1,536	140	425,873	2,298,438
Northern Pacific 1922	35,900	6,933	42,833	10.0	1,302	1,565	706	23.6	352	21.1	2,348	135	826,083	5,195,817
1921	37,862	7,212	45,074	12.3	11,008	1,547	722	25.5	326	18.4	2,295	137	823,346	5,090,283
Ore.-Wash. R. R. & Nav..1922	6,631	2,549	9,180	3.0	3,256	1,345	635	25.4	401	21.5	1,698	226	245,981	1,594,173
1921	5,113	3,767	8,880	4.2	2,067	1,441	724	28.0	483	23.3	1,951	211	247,742	1,592,742
Central Western Region:														
Atch., Top. & Santa Fe..1922	49,496	11,807	61,303	7.7	14,291	1,468	536	20.1	399	30.2	2,499	150	1,683,023	12,792,245
1921	47,538	12,222	59,760	9.9	10,990	1,442	520	20.7	425	32.8	2,598	156	1,744,476	13,152,464
Chicago & Alton.....1922	9,893	3,792	13,685	3.4	2,500	1,167	477	23.0	285	19.5	3,860	193	263,655	1,553,778
1921	9,420	4,234	13,654	4.7	1,700	1,244	529	26.1	378	23.9	5,107	190	282,967	1,591,748
Chic., Burl. & Quincy...1922	48,331	17,687	66,018	8.2	7,776	1,396	612	23.6	384	24.1	2,715	162	1,400,834	8,918,499
1921	50,420	16,120	66,540	13.1	1,888	1,522	711	27.9	477	27.2	3,406	163	1,487,635	9,545,599
Chic., Rock Isl. & Pacific..1922	34,007	13,078	47,085	9.0	7,442	1,147	451	20.6	362	26.4	2,222	172	1,249,644	7,044,537
1921	**31,901**	**16,887**	48,788	**10.6**	9,870	1,128	457	22.9	376	25.5	2,395	179	1,301,586	7,383,079
Denv. & Rio Gr'de West'n.1922	13,489	2,676	16,165	11.3	2,762	1,249	594	26.7	231	12.5	1,441	211	222,257	1,576,810
1921	**13,347**	**2,066**	15,413	**10.9**	3,511	1,236	594	27.1	213	11.4	1,268	231	228,839	1,675,796
Oregon Short Line.....1922	6,475	3,539	10,014	7.2	148	1,410	635	26.2	554	31.2	2,350	142	278,263	1,901,208
1921	**7,729**	**3,120**	10,849	5.9	2,927	1,323	639	28.7	511	26.1	2,349	145	290,216	1,993,300
Southern Pacific 1922	23,521	17,307	40,828	6.6	3,674	1,669	678	23.0	507	33.0	2,967	148	1,273,069	9,924,857
1921	21,852	**18,455**	**40,307**	**11.2**	6,435	1,543	613	23.5	496	33.6	2,867	159	1,352,499	10,700,335
Union Pacific 1922	17,383	6,139	23,522	14.6	3,409	1,626	667	19.7	604	39.6	3,874	162	831,314	6,658,612
1921	19,897	7,309	27,206	22.1	7,842	1,656	732	23.2	595	34.9	4,475	162	836,063	6,829,544
Southwestern Region:														
Gulf, Colo. & Santa Fe..1922	7,429	3,279	10,708	5.0	788	1,427	616	24.1	359	22.4	2,030	146	188,810	1,066,221
1921	**9,907**	**3,036**	12,943	**4.9**	1,048	1,383	624	26.1	406	24.0	2,773	144	189,277	1,090,806
Missouri, Kans. & Tex..1922	8,919	5,233	14,152	**6.9**	4,281	1,526	586	21.5	294	22.6	2,510	144	257,362	1,830,511
1921	9,261	4,525	13,786	7.9	1,463	1,432	585	23.2	311	21.7	2,503	148	264,337	1,936,469
Mo., Kans. & Tex. of Tex.1922	359	10,802	11,161	7.0	2,507	1,126	421	21.9	234	18.2	1,501	160	263,881	1,554,811
1921	367	12,051	12,418	4.5	1,175	1,185	476	24.5	268	18.9	1,914	156	267,302	1,674,326
Missouri Pacific 1922	33,486	17,533	51,019	8.1	2,633	1,304	565	23.2	344	21.3	2,398	160	901,325	5,201,036
1921	33,361	16,101	49,462	8.4	8,313	1,264	573	25.6	387	22.2	2,638	158	916,814	5,293,019
St. Louis-San Francisco..1922	20,991	9,143	30,134	8.2	...	1,045	435	23.5	364	24.1	2,304	184	722,440	4,029,359
1921	21,357	9,855	31,212	7.0	...	987	429	24.9	328	20.3	2,153	200	754,159	4,272,751
Southern Pacific Lines (in 1922	8,608	12,301	20,909	8.9	1,451	1,217	538	25.9	467	27.4	2,632	127	524,229	3,377,353
Texas and Louisiana)[3]..**1921**	**9,019**	**13,753**	**22,772**	**16.2**	3,422	1,162	500	26.5	386	23.9	2,410	140	523,647	3,269,698
Texas & Pacific.....1922	6,444	4,427	10,871	19.8	...	1,285	490	20.8	313	23.5	1,744	146	271,991	1,743,005
1921	**6,136**	**5,468**	**11,604**	**18.5**	...	1,192	465	21.9	364	26.1	2,165	160	306,603	1,933,654

[2]Includes Chicago, Terre Haute & Southeastern from July 1, 1921, only.
[3]Includes Galveston, Harrisburg & San Antonio, Houston & Shreveport, Houston & Texas Central, Houston East & West Texas, Iberia & Vermillion, Lake Charles & Northern, Louisiana Western, Morgan's La. & Tex. R. R. & S. S. Co., and Texas & New Orleans.

thought: Is the foreman to blame for his lack of knowledge or his apparent inability to keep step with the rapid progress of the railway mechanical department? If due consideration is given to the fact that four years of constant training is necessary to produce a passable mechanic, we would say that the foreman who rarely sees any shop except the one in which he is employed and meets no mechanical men other than his daily associates, is not to be censured but rather to be praised for what he does accomplish, and that the time spent at an annual convention or meeting yields large returns.

"Numerous men holding responsible positions today attribute their success and value to their employer largely to the broadening influence gained by attendance at business sessions. Each railway general foreman as a matter of benefit to the stockholders by whom he is employed, his superior officers, and himself should not only be permitted but required to attend the convention of the International Railway General Foremen's Association."

Railroads Appeal to Employees on the Strike Issue

A number of railroad presidents have issued circulars or letters to employees calling attention to some of the fundamental principles involved in the consideration of the strike problems now coming up for decision. C. H. Markham, president of the Illinois Central, appealed to employees to declare themselves against the strike and stand by their employer. He said, in part:

"There is no pending issue on our railroads in regard to piecework and the contracting of shop plants to outsiders. Under these circumstances, you cannot be expected to do otherwise than cast your ballot against a strike on the Illinois Central system. On the ballot relating to rules, there are seven rules mentioned. On four of these rules your representative and our management reached agreements. The remaining three were referred to the United States Railroad Labor Board and by that board decided. * * * "You have received successive general increases in wages and two general decreases, the most recent one to become effective July 1, 1922. * * * Since you have accepted all decisions of governmental agencies that have been favorable to you, my confidence in your spirit of fair play is such that I do not believe you will decline to accept a decision when it is unfavorable to you.

"I am in full sympathy with your ambitions for better working conditions. I earnestly desire that you shall be happy in your employment with the Illinois Central system. I want to do all that I can to advance your interests. I have frequently said in public speeches and newspaper interviews and in conversations with our patrons that there is no more loyal and efficient group of men than the employees of the Illinois Central system. I ask you not to cast your ballot until you have given consideration to both sides of this question, and if you do that I am sure you will reach the right conclusion."

W. H. Finley, president of the Chicago & Northwestern, issued a statement to his employees under the caption "The North Western—Your Railway," in which he declared that if a strike should be called against the decisions of the Railroad Labor Board, it would not only destroy at once the spirit of co-operation which it has taken years to develop but it would also be a strike "against this country's progress toward prosperity." He called upon all employees to stand by the road, stating that the Chicago & North Western had accepted without question the orders for the Labor Board to increase the pay of its men.

W. G. Besler, president of the Central of New Jersey, referring to former circulars issued by him said:

"In each of those letters I emphasized the fact that our relations have always been based upon the principle of *a square deal.* The Transportation Act of 1920 is the law of the land, and this company and its employees, as law-abiding citizens, are bound to respect and obey it.

"In all of the increases and adjustments in pay and working conditions which have been ordered by the Labor Board, some of which were retroactive, the Jersey Central has lived absolutely up to the requirements of the law. * * * I understand that strike ballots have been passed among some of our employees, and that you are requested to vote upon a strike. As your president, and the head of the Jersey Central family, I call upon each and every member thereof to abide by the lawful decision of the United States Railroad Labor Board. I advise and urge this as your best friend. * * * It is only by a continuance of your steadfast loyalty to the employer with whom you have been associated so many years, that we may continue to enjoy that certainty of position and wage which has become a part of our everyday life. * * * Loyalty insures continued permanent position. Loyalty avoids unhappiness, distress and all that goes with dishonorable conduct."

E. J. Pearson, president of the New York, New Haven & Hartford, reminded his employees that a vote for a strike now can only be construed as a vote against organized society. There are 30,000 employees on the New Haven system. If a strike is called, "it follows that the 17,000 employees of the maintenance of way and maintenance of equipment departments will have arrayed against them a public, which is exclusively served, of about four million people. Can a strike be won against such odds? * * * The revision of rules and reduction in rates so far awarded by the labor board, together with all prospective reductions for other classes, assuming they are made on the same percentage basis, will only offset about one-half of the loss in revenue from the reductions in rates which have been ordered in the hope and belief that business is waiting for them in order that it may drive ahead upon some basis of cost which can be regarded as reasonably permanent for some time to come.

"If this theory of the reductions is correct, the readjustments to be made on July 1st will result in a material benefit to workers generally, as industry will revive and start those activities so essential to the comfort, well being and economic existence of all. No individual class can reasonably hope to receive preferential economic treatment as compared to other classes, beyond that which may be definitely established by common consent of society as a whole.

"The public shows no disposition to be unreasonable, * * * There is every confidence in the integrity and ability of the labor board, either individually, or as a group. It has been called upon to decide some of the most momentous questions of peace times. It has searched diligently for the truth. * * * This company seeks, in every way, to avoid disputes with its employees. It believes that in the interest of itself and of society in general, its employees should be well paid; but neither employer nor employee can hope to escape the inexorable effect of economic law. * * *"

The Transportation Act of 1920 contemplates prosperous railways; fair and liberal treatment of employees, proper service for the patrons and reasonable returns to the owners. On the success of the latter, depends the ability of the management to provide the two items first mentioned, also its ability to improve facilities and to more largely stabilize regularity of employment. A railroad is made by the combined endeavors of its officers and employees, by the endeavor of every individual.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May, 1923, Denver, Colo. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—J. F. Gettrust, The Ashton Valve Company, 318 W. Washington St., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago. Annual meeting, Oct. 17-20, San Francisco, Cal.

AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, October 10 and 11, Seelbach Hotel, Louisville, Ky.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next Convention, August 23-25, 1922, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Annual meeting, November, 1922.

Division I—Operating.

Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section. J. C. Caviston, 75 Church St., New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association). J. C. Caviston, 75 Church St., New York, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y. Annual meeting, September 20-22, 1922, Colorado Springs, Colo.

Safety Section. J. C. Caviston, 75 Church St., New York.
Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.
Division III—Traffic, J. Gottschalk, 143 Liberty St., New York.
Division IV—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Exhibit by National Railway Appliances Association.
Construction and Maintenance Section. E. H. Fritch.
Electrical Section. E. H. Fritch.
Signal Section (including former activities of the Railway Signal Association). H. S. Balliet, 75 Church St., New York, N. Y.
Division V.—Mechanical (including former activities of the Master car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Exhibit by Railway Supply Manufacturers' Association.
Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.
Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association).
Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 17-19, 1922, Cincinnati, Ohio. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. Leckie, Industrial Agent, Kansas City Southern Ry., Kansas City, Mo.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliance Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eiseman, 1600 Prospect Ave., Cleveland, Ohio. Annual convention, Oct. 2-7, 1922, General Motors Building, Detroit, Mich.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.
Railroad Division—A. F. Stuebing, Manager Editor, Railway Mechanical Engineer, Wcolworth Bldg., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, 1310-1311 Mallers Bldg., Chicago, Ill. Next convention, June 18, 1923, Chicago.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—S. D. Cooper, A. T. & S. Fe R. R., Topeka, Kan. Next meeting, January 23, 1923, New Orleans, La.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association. Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—D. J. Higgins, American Valve & Meter Company, 332 S. Michigan Ave., Chicago. Meeting with convention of American Railway Bridge and Building Ass'n.

CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrook St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koeneke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in January, March, May, September and November, Hotel Iroquois, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill. Annual convention, August 22-24, Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2d Tuesday in February, May, September and November.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—C. H. Treichel, Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 1414, Manhattan Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual convention, August 15-17, Hotel Sherman, Chicago. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION. George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Next convention, September 5-8, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—C. W. Sullivan, Garlock Packing Co., 326 W. Madison St., Chicago. Meeting with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A. Divisicn V.)

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—Warren C. Nixon, Western Tie & Timber Co., 905 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, September 26, 1922. Detroit, Mich.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition at convention of American Railway Engineering Associatien.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa. Annual dinner, February 1, Waldorf-Astoria, New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electrical Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va. Next meeting October 10-13, 1922, Pittsburgh, Pa.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV., Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division V.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Annual convention, September, 19-21, 1922, Hotel Statler, Cleveland, Ohio. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. L. Carrier, Car Serv. Agt., Tenn. Cent. Ry., 319 Seventh Ave., North Nashville, Tenn. Next meeting, October 19, St. Augustine, Fla.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hilburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, Ohio. Annual convention, September 12-15, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Regular meetings, 3d Monday each month except June, July and August.

P. & A. Photo

Loading Meat at Chicago for 48-Hour Train to New York to Connect With Liner to Europe

Traffic News

R. S. Kreitler has been appointed traffic commissioner of the Canton Chamber of Commerce, Canton, Ohio.

Reductions of about ten per cent have been made by the Pennsylvania Railroad in the ferry boat rates, at New York and Philadelphia, for the transportation of automobiles, trucks and other vehicles, this traffic being classed as freight and as coming under the order of the Interstate Commerce Commission calling for a general reduction of ten per cent on July 1.

The Southern Railway, for the summer tourist season, announces the "Land of the Sky Special," a train giving over-night service between Asheville, N. C., and the Southeast with through sleeping cars from Wilmington, Charleston, Savannah, Atlanta, and Macon. Through sleeping car lines have been established to Asheville from Chicago and St. Louis in addition to which the lines from New Orleans, Mobile, Montgomery, Birmingham, and Chattanooga have been re-established for the summer. Sleeping car lines have also been established between Memphis, Tenn., and Richmond, Va., via Asheville, and between Cincinnati, O., and Goldsboro, N. C., via Asheville.

Coal Production

Production of soft coal has taken a sharp upward turn in the twelfth week of the strike, according to the Geological Survey bulletin, and may approach 5,500,000 tons. Production of anthracite remains practically zero.

Complete returns on the eleventh week (June 12-17) show a production of 4,986,000 tons of soft coal and 22,000 tons of anthracite. The record of the twelfth week (June 19-24) shows a prompt recovery from the traffic congestion which had interfered with the placement of cars at mines in Eastern Kentucky and parts of West Virginia. The increased production comes not from any of the strongly organized fields, but results from a gradual return to work in non-union fields affected by the strike, and from increased activity in districts of the Far West where demand has hitherto been insufficient to call out full production. The accumulation of unbilled loads is still declining and the draft upon consumers' stockpiles continues. In the eleventh week of the strike the daily average number of unconsigned loads of bituminous coal was 4,672. The total is now less than a sixth of that in the week of April 8. Counting 50 tons to a car, the quantity of unbilled coal is now about 250,000 tons. In comparison with the country's daily requirements of over a million tons, this appears small.

Freight Commodity Statistics—Three Months

The Bureau of Statistics of the Interstate Commerce Commission has compiled a statement showing by districts the freight tonnage transported by Class I steam railways for the quarter ended March 31, 1922. Below will be found a comparison, by general classes of commodities, of the tonnage transported in 1921 with that transported in 1922:

Class of commodities	Number of tons originated: Quarter ended Mar. 31, 1921	Quarter ended Mar. 31, 1922	Percent of increase 1922 over 1921
Products of agriculture	26,038,239	25,754,849	*1.09
Animals and products	5,911,716	5,881,188	* .52
Products of mines	115,791,162	120,906,905	4.42
Products of forests	20,646,604	19,265,592	*6.69
Manufactures and misc.	39,812,181	40,982,017	2.94
Mdse.—All L. C. L. freight	9,883,165	9,790,533	* .94
Total	218,083,067	222,581,084	2.06
	Total tons carried		
Products of agriculture	53,141,476	53,892,804	1.41
Animals and products	9,853,773	10,077,556	2.27
Products of mines	206,344,981	220,127,811	6.68
Products of forests	38,477,252	36,464,473	*5.23
Manufactures and misc.	78,389,745	79,722,973	1.70
Merchandise	15,906,966	16,013,192	.67
Total	402,114,193	416,298,809	3.53

*Decrease.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until October 28 the operation of schedules published by the Missouri Pacific which propose to establish from Sioux City, Ia., to various points in Arkansas and Missouri south of St. Louis, Mo., rates on grain and grain products 5 cents per 100 lb. higher than the rates from Omaha.

The commission has suspended until October 13 the operation of schedules published by the St. Louis-San Francisco which propose to limit the territory to which sugar stored in transit at Wichita, Kansas, could be reshipped, thereby resulting in increased charges on such traffic to the extent of the local rates from Wichita to ultimate destinations of the reshipped product.

The commission has suspended from June 22 until October 20 the operation of schedules published by the Mobile & Ohio which propose the cancellation of joint through rates on crushed, ground and rough-quarried limestone, carloads, from Columbia Quarry No. 2, Ill., and Krause, Ill., to St. Louis, Mo., when routed via Vulcan, Ill., and the Missouri Pacific Railroad, and the application in lieu thereof of switching charges ranging from 10 to 60 cents per net ton in addition to the present rate of 70 cents.

State Commissions

The Railroad Commission of California, in conjunction with the State Corporation Commissions of Arizona and New Mexico, after a two days' conference on the United States Supreme Court decision in the Southern Pacific-Central Pacific dissolution case, sent a telegram to the Interstate Commerce Commission urging that body to hasten the proposed grouping of railroad lines in the western region. Under the tentative plan proposed by the Interstate Commerce Commission the Southern Pacific and the Central Pacific are left as one system.

Ticket Frauds on the New York Central

The Public Service Commission of New York decided, last December, in favor of the railroad company, on a complaint made by Lanman Crosby of the alleged injustice of requiring him to provide himself with a copy of his photograph to show to conductors with his monthly commutation ticket. In the full report of the commission, which has recently been issued, interesting details are given of the practices which led to the establishment of the requirement that photographs must be provided.

The report deals with the suburban traffic to and from New York City on two divisions, the Hudson and the Harlem. Typical stations are Ossining, 30 miles from New York, where the one-way fare is $1.10, and the cost of a ride on the monthly ticket 17 cents; White Plains, 22 miles, one-way fare 82 cents, commutation 14 cents.

The company sells as many as 20,000 commutation tickets a month. These tickets for at least four years past have been misused. They were to be bought at various stores, fruit stands, bootblack stands, poolrooms, barber shops, cigar stores and groceries in most of the small towns.

Continuing, the report says:

Detectives rented commutation tickets in a great many of the small places, and conductors took up tickets on the trains from parties to whom they were not issued. Bundles of tickets so taken up were presented at the hearing. It was obvious as shown by the signatures of the purchasers thereon and of the persons from whom they were taken that they were presented by others than the purchasers. At Ossining one man rented space in a store, and dealt in these tickets, and on Sunday night could be found on the station platform collecting the tickets from persons to whom he had rented them, on their return. One woman at White Plains had eighteen or twenty tickets a month. The practice was, at the start of each month, for her to give a customer wishing to go to New York and return the price of a commutation ticket to be taken out in his or her own name.

The next man or woman did the same, and the process continued until the dealer had accumulated enough tickets to last during the month. One could go to her, secure a ticket, ride to New York and return on it, pay her the charge, and return the ticket to her. Her charge was considerably less than the regular rate which the passenger would have needed to pay.

The company procured injunctions against persons renting out these tickets, in the State and Federal courts, and restrained, for instance, in Ossining 13 persons, in Poughkeepsie 37 persons, in Newburgh 44 persons. The injunctions, however, did not stop the sales by other people.

After the requirement of the photograph on the commutation tickets was put in effect, the sale of commutation tickets fell off in one month at—

Ossining	165
Peekskill	94
Poughkeepsie	62
White Plains	300
Mount Kisco	78
Yonkers	145
Hartsdale	50

Commutation tickets with a like photographic requirement have been used on the Baltimore & Ohio between Philadelphia and Wilmington, on the Pennsylvania between Philadelphia and New York and between Trenton and North Philadelphia, and 100-ride tickets for the season of 1921 with such a requirement were in use on the Central of New Jersey between New York and Bradley Beach.

Personnel of Commissions

H. D. Loveland, a member of the California Railroad Commission since its organization in 1907, died at his home in San Francisco on June 11.

Court News

Charge for Parking Showman's Cars Valid, Though Not in Tariff

The Alabama Supreme Court holds that a railroad is entitled to make a charge to a showman for parking his cars on its tracks for 45 days, although such charge is not contained in its tariffs.—A. G. S. v. Wood (Ala.), 90 So. 502.

Coal Spur—Right of Eminent Domain

The Pennsylvania Supreme Court holds that an extension of a railroad to be employed largely to take coal from certain coal mines is a public use sufficient to justify the exercise of the right of eminent domain.—Pioneer Coal Co. v. Cherrytree & Dixonville (Pa.) 116 Atl. 45.

Spur Track Held Unnecessary

Although a spur track would be a great convenience to certain shippers and decrease their operating expenses, the Arkansas Supreme Court holds that this is not a service the railroad is required to furnish, where adequate facilities for all shipping purposes are furnished these and all other shippers at the regular passing track, in the absence of a contractual right to have the spur maintained.—Thomas-Bowman Cooperage Co. v. Missouri & North Arkansas (Ark.) 237 S. W. 101.

Assumption of Risk—Question for Jury

The Circuit Court of Appeals, Third Circuit, holds that where an employee calls the attention of his foreman to a defect in the tool he is using (in this case a wrench) and objects to using it, but returns to his work with it, without an assurance of reparation from the employer, the question whether he voluntarily assumed the risks incident to the use of the defective tool was for the jury in an action under the Federal Employers' Liability Act; and that the test is whether the conduct of the foreman was such as to justify the employee in relying on the foreman's judgment rather than on his own in the continued use of the tool, or, on the other hand, whether the danger from the defect in such continued use was so imminent that no man of ordinary prudence would hazard it.—L. V. v. Skoczyla, 278 Fed. 378.

Foreign Railway News

Japanese Railway Buys American Electrical Equipment

The Westinghouse Electric & Manufacturing Company announces that it has received an order for motor car and substation equipment from the Chichibu Railway which operate in the vicinity of Tokio, Japan. A large part of this new equipment will be a duplicate of the large order shipped from the Westinghouse Company's plant at East Pittsburgh to the Chichibu Railway during the past year.

L. & N. W. Withdraws Bill Permitting Highway Transport

The London & North Western has withdrawn its support of the bill before Parliament which was drawn to allow it to engage in the transportation of freight by motor upon the highways. The company's loss of interest in the bill is due, apparently, to the insistence of the Ministry of Transport that the rates to be charged be regular railway rates and not those established by competing highway trucking concerns. The railway rates are, as a general rule, higher than the highway rates; consequently the railway could hope for little business if restricted as the Ministry of Transport proposed.

Death of Noted British Mechanical Officer

LONDON.

Norman J. Lockyer, locomotive works manager of the North Eastern Railway at Darlington, England, and one of Britain's best known railway mechanical men, died recently. Mr. Lockyer commenced his apprenticeship with Sir J. Whitworth & Co., Ltd., of Manchester, England, in 1877. Subsequently he served in the works of the Manchester, Sheffield & Lincolnshire Railway at Gorton until 1882, when he was employed by the running department. In 1885 he joined the staff of Sir A. M. Rendel, being employed in superintending the manufacture of locomotives for the Indian State and other railways. In 1896 he was appointed manager of the works of Sharp, Stewart & Co., Ltd., of Glasgow, the locomotive builders, and in 1899 he became works manager of the Gateshead Locomotive works of the North Eastern Railway. He was transferred to the Darlington works in 1909. He was the inventor of a number of devices for use on locomotives and in railway shops, one of the best known of his locomotive invention being called the "Lockyer" double-beat regulator valve.

Rhodesia Wants Railways

It has been reported, says Trade Commissioner P. J. Stevenson, Johannesburg, in a report to the Department of Commerce, that Rhodesia demands railroads before entering the Union of South Africa. A railroad between Walvis Bay, Southwest Africa, and the Wankie coal fields in southern Rhodesia is considered most important, since it will afford an outlet through Walvis Bay for Wankie coal to the east coast of South Africa and will open up Southwest Africa and the Bechuanaland Protectorate for development. A road extends from Walvis Bay to Grootfontein and if extended, as desired, it would form the first transcontinental railroad in Africa.

Next is the linking up of West Nicholson and Messina, which would give southern Rhodesia access to the sea through the port of Lourenco Marques. At present a roundabout route through the Union or through the less important port of Beira is used. A road is desired also between Sinoia in southern Rhodesia and Broken Hill in northern Rhodesia, to form the connecting link that would afford an outlet through Beira for the large volume of copper from the Katanga District of the Belgian Congo. The people of Rhodesia are said to consider the road to Walvis Bay as an economic necessity and to expect its early construction.

Equipment and Supplies

Locomotives

MITSUI & COMPANY, New York City, has ordered from the H. K. Porter Company two locomotives for export to Siam.

THE DELAWARE, LACKAWANNA & WESTERN contemplates asking for bids in the near future on about 30 locomotives.

THE SOUTHERN RAILWAY has ordered 15 Mikado type locomotives from the American Locomotive Company. The Southern is also inquiring for 15 Pacific type locomotives.

THE LEHIGH VALLEY, reported in the *Railway Age* of June 24 as inquiring for 5 locomotives, has ordered 5 Mikado type locomotives from the Baldwin Locomotive Works.

THE NEW YORK, CHICAGO & ST. LOUIS, reported in the *Railway Age* of June 10 as contemplating buying about 10 locomotives, has ordered 14 locomotives from the Lima Locomotive Works.

THE MAGNA ARIZONA RAILROAD has ordered 1 Consolidation type locomotive from the American Locomotive Company. This locomotive will have 22 by 28 in. cylinders and a total weight in working order of 199,000 lb.

THE CHOSEN RAILWAY (Korea) has ordered 6 Pacific type locomotives from the American Locomotive Company. These locomotives will have 24 by 26 in. cylinders and a total weight in working order of 203,000 lb.

THE STANDARD SLAG COMPANY, Youngstown, Ohio, has ordered two 4-wheel switching locomotives from the American Locomotive Company. These locomotives will have 16 by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE TENNESSEE COPPER COMPANY, Copperhill, Tenn., has ordered 1, 6-wheel switching locomotive from the American Locomotive Company. This locomotive will have 20 by 26 in. cylinders and a total weight in working order of 133,000 lb.

THE W. F. CAREY COMPANY, 90 Wall street, New York City, has ordered 2, 4-wheel switching locomotives from the American Locomotive Company. These locomotives will have 14 by 22 in. cylinders and a total weight in working order of 79,000 lb.

THE LEHIGH PORTLAND CEMENT COMPANY, Allentown, Pa., has ordered one 4-wheel switching locomotive from the American Locomotive Company. This locomotive will have 11 by 16 in. cylinders and a total weight in working order of 43,000 lb.

THE CHICAGO & EASTERN ILLINOIS, reported in the *Railway Age* of June 17 as inquiring for ten Mikado type locomotives, has ordered this equipment from the American Locomotive Company, and expects to place orders for six Pacific type locomotives this week.

THE ABITIBI POWER & PAPER COMPANY, Montreal, Quebec, has ordered one Mogul type locomotive from the American Locomotive Company. This locomotive will have 19 by 26 in. cylinders and a total weight in working order of 141,000 lb. This company has also ordered 1 Shay locomotive from the Lima Locomotive Works.

Freight Cars

THE NORFOLK SOUTHERN is inquiring for 286 steel underframes.

THE PHILADELPHIA & READING is inquiring for 100 refrigerator cars.

THE BROOKS SCANLON COMPANY, Kentwood, La., is inquiring for 25 steel logging cars.

THE DELAWARE, LACKWANNA & WESTERN is inquiring for 380 gondola car bodies of 40 tons' capacity.

THE LEHIGH & NEW ENGLAND is inquiring for 50 low side composite gondola cars of 50 tons' capacity.

THE CHICAGO, MILWAUKEE & ST. PAUL is reported to be preparing to make repairs to about 800 gondola cars in its own shops.

THE TEMISKAMING & NORTHERN ONTARIO is inquiring for from 50 to 75 steel underframe, double-sheathed box cars of 40 tons' capacity.

THE BUFFALO & SUSQUEHANNA, reported in the *Railway Age* of June 17 as inquiring for 200 hopper car bodies of 55 tons' capacity, has ordered this equipment from the Standard Steel Car Company.

THE NORFOLK & WESTERN, reported in the *Railway Age* of June 17 as inquiring for 1,000 single-sheathed box cars of 50 tons' capacity, is inquiring in addition to that number for 1,000 hopper cars of 70 tons' capacity.

THE WAR DEPARTMENT is offering for sale 7,554 new railroad cars including box, flat and gondola cars—all built by American manufacturers for military service in France. Bids for this equipment will be received until 3 p. m., July 6, at Washington, D. C.

THE PENNSYLVANIA SALT MANUFACTURING COMPANY, Philadelphia, Pa., has ordered from the General American Tank Car Corporation 5 tank cars for transporting liquid chlorine. This is in addition to the 10 cars ordered from the same company as reported in the *Railway Age* of June 10.

THE NORTHERN PACIFIC, reported in the *Railway Age* of June 24 as having ordered part of its large freight car inquiry, has just placed an order for 1,000 automobile box cars and 250 stock cars with the General American Car Company. This company is expected to place orders for 250 gondola cars this week.

THE NEW YORK CENTRAL has ordered 1,106 self clearing hopper cars of 55 tons' capacity from the American Car & Foundry Company, 18 low side gondola cars of 70 tons' capacity from the Standard Steel Car Company and 49 high side gondola cars of 50 tons' capacity from the Buffalo Steel Car Company.

Passenger Cars

THE BOSTON ELEVATED is inquiring for 40 tunnel cars.

THE BROWN-MCFARLAND COMPANY is inquiring for 30 electric car trucks.

THE VIRGINIA COAL & IRON COMPANY is inquiring for one private car.

THE CARNEGIE STEEL COMPANY, Pittsburgh, Pa., is inquiring for one pay car.

THE TEXAS & PACIFIC is inquiring for one combination baggage and express car.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for eight buffet library cars.

THE NEW YORK CENTRAL is building three steel baggage cars at its West Albany shops.

THE CHESAPEAKE & OHIO has ordered one steel private car from the Pullman Company.

THE METROPOLITAN RAILWAY OF BARCELONA, Spain, is inquiring through the car builders for 20 subway cars.

THE PHILADELPHIA & READING is inquiring for 5 all-steel baggage cars 63 ft. long and for 5 all-steel combination baggage and mail cars 63 ft. long with 30 ft. mail compartments.

THE CHICAGO & EASTERN ILLINOIS, reported in the *Railway Age* of June 17 as contemplating the purchase of a number of baggage cars, will send out inquiries for 17 cars as soon as specifications are completed.

Iron and Steel

THE SOUTH MANCHURIAN RAILWAY will receive bids until July through New York export houses for 7,000 tons of 100-lb. rail.

THE NORTHERN PACIFIC has ordered 270 tons of steel from the American Bridge Company for overhead bridges between Minneapolis, Minn., and St. Paul.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS will receive bids until July 7, for a large number of bolts, screws, nuts, iron bars, billets, plates, sheets, shapes, nails, wire, axles and tubes, the equipment to be supplied for period between July 1 and October 1 of this year.

Track Specialties

THE PENNSYLVANIA is inquiring for 100,000 tie plates for 100-lb. rails.

Machinery and Tools

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 11 traveling cranes, the largest of which are two 225-ton cranes for its new shops at Denver, Colo. This company is expected to issue another machine tool list at an early date to equip the new shop.

THE GREAT NORTHERN is inquiring for 350 spout hoist machines, 350 cam shaft levers, 36 steel motor pinions, 36 steel spur gears, 36 nine-inch bearings for 2 7/16 in. diameter line shafting, 18 five-inch bearings for the same shaft dimensions and 4,030 ft. of cold rolled steel line for shafting of 2 7/16 in. diameter.

Miscellaneous

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, July 12, at Roanoke, Va., for its requirements of couplers and repair parts; 10,000 steel switch plates and 2,200 signal rail bonds.

THE PITTSBURGH & LAKE ERIE will receive bids until 12 o'clock noon, July 6, at Pittsburgh, Pa., for three months' requirements of car and locomotive axles, slag ballast, Portland cement, stovepipe iron, pickled steel sheet, galvanized sheet steel, wire nails, wire rope, steel billets, bars, shapes and plates.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon, July 5, at Roanoke, Va., for its requirements from July 1 to September 30, of miscellaneous steel castings, cast steel truck bolsters and cast steel side frames; 3,000 tons of steel shapes, plates and bars; and its requirements of brake shoes. Bids are also requested for 200 cast steel side frames, 100 cast steel truck bolsters and 50 cast steel body bolster center castings.

Signaling

THE CHICAGO, BURLINGTON & QUINCY has placed an order with the Federal Signal Company for 50 Federal type "4" top post signals to be installed in the vicinity of Aurora, Illinois.

THE CHICAGO, BURLINGTON & QUINCY will install signals on 89 miles of single track and 20 miles of double track at various points this season in addition to the 56 miles reported in *Railway Age* of May 20.

THE ST. LOUIS-SAN FRANCISCO has placed an order with the Federal Signal Company for a 48-lever Saxby & Farmer interlocking machine and other necessary materials for the rebuilding of an interlocking plant at Aurora, Mo.

THE GRAND TRUNK has placed an order with the Federal Signal Company for 24 Federal type "4-A," 3-position, U. Q. bottom post signals, for an installation of automatic permissive block signaling on its line in the vicinity of Yarmouth, Maine.

CHICAGO BURLINGTON & QUINCY.—This company will soon request bids for the installation of light signals between Hannibal, Mo., and Louisiana and between Ewbanks, Ill., and Quincy, the distances totaling 32 miles, and has under consideration the installation of signals between Lytle, Wis., and Bluff Siding and between Arapahoe, Neb., and Indianola, this distance totaling 45 miles.

Supply Trade News

Charles M. Schwab, chairman of the board of directors of the Bethlehem Steel Corporation, has been elected chairman of the board, also of the **Chicago Pneumatic Tool Company,** New York, to succeed John R. McGinley, who resigned as chairman but who remains as a director of the company.

The business of the Pittsburgh High Voltage Insulator Company, Pittsburgh, Pa., will be carried on in the future under the name of the **Westinghouse High Voltage Insulator Company.** The change in name does not affect the management or method of conducting the business of the company which will continue to be carried on as it has been in the past.

The U. S. Light & Heat Corporation, Niagara Falls, N. Y., has received orders for about 500 USL car lighting devices in the last sixty days from the following railroads; Atchison, Topeka & Santa Fe; Boston & Maine; Chesapeake & Ohio; Chicago, Rock Island & Pacific; Norfolk Southern; Norfolk & Western; Pennsylvania; and Wabash.

Colonel Walter J. Riley, president of the O. J. Jordan Company, East Chicago, Ind., has been appointed chairman of the Interstate Harbor Commission, a joint commission of the states of Illinois and Indiana and the United States Government, to consider the development of a harbor in the vicinity of Hammond, Ind., which project when carried out will include extensive rail as well as water terminals.

The Products Distributing Corporation, 360 Madison avenue, New York has been organized as a selling company for a direct drive axle generator and system for the electric lighting of railway cars. The equipment will be built by the Wagner Electric Company of St. Louis, Mo., under the E. M. Fitz patents. The generator used with this equipment is of the self-regulating, constant-voltage type and is mounted directly on one of the car axles.

The engineering staff of the **Strauss Bascule Bridge Company,** Chicago, has been reorganized and is now as follows: **J. B. Strauss,** president and chief engineer; **C. A. Ellis,** vice-president and engineer in charge of design; **P. L. Kaufman,** assistant secretary and contracting engineer; **C. E. Paine,** designing engineer. The New York office has been discontinued and new eastern offices opened at room 603 Albee building, Washington, D. C., in charge of **J. C. Eversman. L. O. Hopkins,** who was transferred about a year ago from the Strauss Bascule Bridge Company to the Strauss Yielding Barrier Company, is no longer connected with the latter company and his relations with both companies have been entirely severed.

William H. Eager, since 1918 first vice-president of the **Whitman & Barnes Manufacturing Company,** Akron, Ohio, has been elected president to succeed A. D. Armitage, who resigned on June 7, in order to give more of his time to his duties as vice-president and general manager of the J. H. Williams Company, Brooklyn, N. Y., with executive offices in Buffalo. Mr. Armitage still remains a member of the Whitman & Barnes board of directors. Mr. Eager is a graduate of the Massachusetts Institute of Technology, and for the past 16 years has been with the Whitman & Barnes Manufacturing Company, having joined the organization as assistant superintendent of its Chicago factory, later becoming works manager and in 1908 he was elected treasurer. In the early part of 1909 he was transferred to Akron, two years later he was appointed sales manager, and in 1918 was elected first vice-president. **Frank W. Oliver** has been appointed eastern sales manager of the Whitman & Barnes Manufacturing Company, with headquarters at 64 Reade street, New York City. Mr. Oliver has been connected with the drill and reamer industry continuously for 23 years.

Financial Plan for Improvements of Lima Locomotive Works

The Lima Locomotive Works, Incorporated, plans to complete the extension to its manufacturing plant at Lima, Ohio, at an estimated cost of $1,500,000. The program of enlargements and additions has been in progress during the past three years and approximately the same sum has already been spent. The completion of these additions will increase its capacity about 50 per cent.

The Board proposes to redeem $1,393,000 of first mortgage bonds which are now outstanding, as the interest and sinking fund payments amount to $170,000 per annum, equivalent to 12.2 per cent. on the amount of bonds now outstanding.

To provide money for these purposes new financing is required, which can be done to best advantage by an issue of common shares without par value. The board proposes that the certificate of incorporation be amended so as to change the existing common stock into shares without par value, giving each present common stockholder two such shares for each of his present shares, and so as to make the total authorized issue of such new common stock 300,000 shares, and to provide that the preferred stock, which is now convertible into the existing common stock on the basis of share for share, shall be convertible into such new common stock on the basis of two common shares without par value for each preferred share, and further to provide that while any of the preferred stock remains outstanding, the holders of the new common stock shall be entitled to one vote for each two shares held by them. While the preferred stock will thus retain in full its preferential position as to assets and dividends, and its conversion privilege and proportionate voting position will be protected, the common stockholders will receive two shares for each one they now hold, and there will be available for subscription such additional number of shares as will provide the desired new capital.

A special meeting of the stockholders has been called to be held at the principal office of the company in Richmond, Virginia, on July 14, 1922, to vote on the necessary amendment of the certificate of incorporation and incidental matters mentioned in such notice.

Subject to such amendment being authorized by the stockholders the board has resolved to offer to the common stockholders of record at the close of business on July 20, 1922, the right to subscribe for and purchase at the price of $50 per share, one and one-third shares of such new common stock for each share of the existing common stock.

Preferred stockholders as such will not be entitled to subscribe for the new common stock. They can, however, obtain the right to do so by converting their stock into common stock on or before the close of business on the 20th day of July, 1922.

There are now outstanding 23,560 shares of preferred stock and 48,590 shares of the present common stock. If no more of the preferred stock should be converted, the number of preferred shares outstanding after the completion of the financing would remain at 23,560, and the number of common shares would be 161,967.

The stock transfer books will be closed, for the purposes of the stockholders' meeting from three o'clock p. m. on June 28, until ten o'clock a. m. on July 15, 1922, during which period no conversion of preferred stock into common stock is permitted, but the books will be reopened on the last mentioned date, in order to afford an opportunity for transfers and for conversion of preferred stock, until three o'clock p. m. on the said 20th day of July, 1922, at which time all subscription rights will belong to common stockholders then of record. Subscriptions will be received up to the close of business on August 16, and payment of one-half of the subscription price or $25 per share will be required at the time subscription is made. The payment of the balance of the subscription price or $25 per share will be required on or before the close of business on September 15. Suitable subscription warrants will be mailed as promptly as possible after the close of business on July 20, 1922, to the common stockholders of record at that time.

The quarterly dividend of 1¾ per cent. on the existing common stock of the company will be paid on September 1, 1922, to holders of existing common stock of record on August 15, 1922. The new common shares which will be offered for subscription as above stated, will not participate in this dividend, but will be entitled to participate in all dividends which may be declared on the common stock of the company from and after September 2, 1922. The next following quarterly dividend date will be December 1, 1922.

Trade Publications

The Federal Signal Company, Albany, N. Y., has issued a bulletin, numbered 12-A, describing in detail its new neutral direct-current relay, style "M." This relay is said to embody a new design of contact finger, giving a wide range of adjustment without bending any of the parts, and a new type of trunnion and adjustable armature support claimed to insure perfect alinement of the bearing holes.

Flood and Searchlights.—The Pyle National Company, Chicago has recently issued supplement 2, of catalog 101, illustrating and describing a series of flood lights and searchlights adapted to the lighting of yards, loading platforms, locomotive coaling operations and construction work and general roundhouse illumination. The bulletin includes a list of parts for this equipment and presents illustrations to show the application of the lights to various kinds of night work.

Insulating and Soldering.—A catalogue supplement describing insulating and soldering compounds and announcing the extension of that line of products has been issued by the Westinghouse Electric & Manufacturing Company. The publication is known as 5-A, Supplement No. 2. The materials discussed in the supplement are baking and air-drying varnishes, insulating compounds, finishing materials, including paints, enamels, lacquers, etc., insulating glue, soldering flux, and lubricating oil.

Welding Rods and Electrodes.—A 40-page handbook known as Catalog No. 500 has recently been issued by the Page Steel & Wire Company, Bridgeport, Conn., which gives a variety of information concerning Page-Armco welding rods and electrodes for oxy-acetylene and electric welding. The catalog is well illustrated and, in addition to the welding rod data, it contains a fund of miscellaneous information useful to the welder concerning the metallurgy of iron and steel, amount of welding material required per lineal foot of weld, definitions of electrical units, mensuration factors, wire gage table, etc.

Shipment of Creosoted Fir Ties from Victoria, British Columbia to India is now claimed to be a permanent business. Last year two full shiploads were sent. They were experimental, the Indian Government also testing at the same time Burmese, Javanese and Australian woods. Of all the imported woods the British Columbia material was most satisfactory and another lot of 7,000,000 is now going forward.

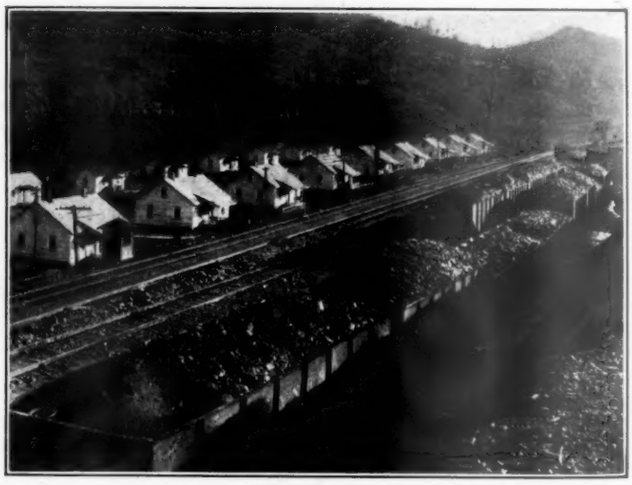


Photo by International

In the West Virginia Coal Fields

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company, which was reported in the *Railway Age* of June 3 as receiving bids for station extensions and alterations at Lubbock, Texas, and Waynoka, Okla., to cost approximately $15,000 each, has awarded contracts for this work to E. F. Ware, El Paso, Texas.

BUFFALO, ROCHESTER & PITTSBURGH.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 1,200-ton frame coaling station at Rickers, Pa., to include Duplex hoisting equipment with two-way buckets and complete sanding facilities.

CHESAPEAKE & OHIO.—This company has awarded a contract to Fairbanks, Morse & Company, Chicago, for the construction of an 800-ton reinforced concrete coaling station, sand drier and cinder handling plant at Clifton Forge, Va. The coaling station will have pockets for three kinds of coal, viz., run-of-mine, passenger engine stoker and freight engine stoker. The station will be electrically operated and will have a hoisting capacity of 100 tons per hour. The station is equipped with a coal crusher and screen so that run-of-mine coal can be prepared for stoker use if necessary. The ash handling facilities will consist of two 200-ft. pits equipped with clam-shell buckets on overhead traveling cranes. The estimated cost of this work is $92,000. The same contractors will also build a 500-ton, reinforced concrete coaling station, sand drier and cinder handling plant for this company at Thurmond, W. Va., to cost approximately $52,600. This station will handle both run-of-mine and stoker coal and will also be provided with a crusher and screen. The station is to be electrically operated with a hoisting capacity of 75 tons per hour. The cinder disposal plant provides for underground haulage. The company has awarded a contract to the Fairfield Engineering Company, Lancaster, Ohio, for the construction of a 300-ton frame coaling station at Charlottesville, Va., to cost approximately $15,500. A 250-ton frame coaling station will be built by company forces at Raleigh, W. Va. A Robertson cinder conveyor will also be installed at this point. The cost of this work is estimated at $18,000. The company has awarded a contract to J. T. Nuckols, Richmond, Va., for the construction of a reinforced concrete freight house, 52 ft. by 523 ft., at Norfolk, Va., to replace a structure destroyed by fire. This will be a one-story structure except for 101 ft. at one end, where two stories will be provided for office use. In this structure panels of "Gunite" siding will alternate with rolling steel doors. Four fire walls of hollow tile construction and automatic fire doors will be provided. The roof will be of reinforced concrete slabs covered with 4-ply built-up asbestos roofing. This work will cost approximately $161,000. This company in conjunction with the state highway department of Virginia is eliminating a grade crossing at Longdale, Va., by the construction of a subway. Major Bros. & Company, Clifton Forge, Va., have the contract for this work which will cost approximately $20,000. The awarding of contracts to Joseph E. Nelson & Sons, Chicago, for extensive engine terminal improvements at Peru, Ind., and Peach Creek, W. Va., were noted in the *Railway Age* of June 24.

CHICAGO, BURLINGTON & QUINCY.—This company is calling for bids for the construction of a new 6-stall engine house at Rock Island, Illinois, bids to close July 6.

CHICAGO & NORTH WESTERN.—This company, which was reported in the *Railway Age* of May 13 as contemplating the rebuilding in the near future of its 12-stall engine house at Ashland, Wis., and in the *Railway Age* of June 24 as calling for bids for the construction of this work, has awarded the contract to C. W. Gindle, Chicago.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is contemplating the construction of a freight station at Omaha, Nebraska, to cost in the neighborhood of $200,000.

ERIE.—This company, which was reported in the *Railway Age* of June 3 as expecting to call for bids in the near future for an extension to its shops at Hornell, N. Y., has awarded the contract for this work to the Bates & Rogers Construction Company.

HOUSTON & BRAZOS VALLEY.—This company has applied to the Interstate Commerce Commission for a certificate authorizing construction of an extension from a point 1.9 miles south of Clute Station, Texas, in a northeasterly direction 13 miles, to Hoskins Mound, to reach a sulphur deposit.

ILLINOIS CENTRAL.—This company has awarded a contract to G. A. Johnson, Chicago, for and is now undertaking the construction of an addition to the hospital at Chicago, to cost approximately $250,000.

ILLINOIS CENTRAL.—This company, which was reported in the *Railway Age* of June 17, as calling for bids for the construction of a water supply line at Kankakee, Ill., to cost approximately $20,000 has awarded a contract to the Railway Water & Coal Company, Chicago.

KANSAS & OKLAHOMA.—This company has located and is preparing to build an extension to its present line northwesterly through Hugoton, Kan., and on to Trinidad, Col. A preliminary route has been established as far as Colorado.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—This company will rebuild its 16-stall roundhouse recently destroyed by fire at Gladstone, Mich., although plans concerning the date of rebuilding and the type of structure are as yet indefinite.

PENNSYLVANIA.—This company is receiving bids for the following projects: The elevation of tracks and the elimination of grade crossings on the Conemaugh division from the Ft. Wayne connection at Anderson street to Thirtieth street bridge (Northside) Pittsburgh, Pa., and the construction of a reinforced concrete arch bridge to carry a state highway over the tracks of the Indiana branch, Conemaugh division, at a point south of Reed station, Pa. The work on the two above projects will be in charge of George Nauman, assistant to chief engineer, Pittsburgh, Pa. This company is also receiving bids for the construction of an undergrade bridge on line of Station avenue at Cornwells, Pa. The structure will have a 27 ft. roadway and a 6 ft. sidewalk. The work will be in charge of J. P. Temple, assistant engineer, Philadelphia, Pa.

UNION PACIFIC.—This company has authorized and will undertake at the earliest possible date the construction of 20.47 miles of second track on the Oregon Short Line through Glenns Ferry, Idaho. The timber treating plant which this company was reported in the *Railway Age* of April 29 as planning to construct at The Dalles, Oregon, at an expenditure of approximately $500,000, has been authorized and a contract for the grading awarded to Grant Smith & Company, Portland, Ore., pursuant to the company's plan to push the work to an early completion and store ties in the near future. The company's plans relative to extensive improvements to its store department facilities at Pocatello, Idaho, Rawlins, Wyo., and Grand Island, and Omaha, Nebr., as reported in the *Railway Age* of April 29, have advanced to the point that it has installed gantry crane on a 1,000-ft. runway at Pocatello and expects to start in the near future the construction of a 175-ft. addition to the store house at that point as well as a small paint storage cellar. The 7½-mile extension of the Homedale branch of the Oregon Short Line, reported in the *Railway Age* of May 13, as having been authorized by the Interstate Commerce Commission, is now under construction and will be completed this season. The company expects to start in the near future and complete this season the construction of the Delta-Fillmore branch of the Los Angeles & Salt Lake, but does not contemplate undertaking this year the construction of the proposed terminal facilities at Los Angeles for which property has been acquired, as reported in the *Railway Age* of April 29.

VIRGINIAN & WESTERN.—The Interstate Commerce Commission has issued a certificate authorizing this company which is a subsidiary of the Virginian to construct an extension from the end of the Virginian Connecting Branch, a distance of 3.6 miles. The commission, however, denied the request for permission to retain the excess earnings because the new line will be operated as a part of the Virginian.

WABASH.—This company, which was reported in the *Railway Age* of June 24 as calling for bids for the construction of a reclamation plant at Decatur, Illinois, has awarded the contract for this work to C. W. Gindle, Chicago.

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Santa Fe & Los Angeles Harbor by lease and purchase of its stock.

ATLANTA & ST. ANDREWS BAY.—*Abandonment of Line Authorized.*—Upon further hearing and consideration of the results of a suspension of operation for an experimental period, the Interstate Commerce Commission has issued a certificate authorizing the abandonment of operation of this company's branch line between Panama City and St. Andrews, Fla.

ALABAMA & MISSISSIPPI.—*To Be Sold.*—This railroad will be sold at public auction on July 31 at Pascagoula, Miss., by Hernando Money, special commissioner. The road operates between Vinegar Bend, Ala., and Pascagoula, 78 miles. It has been in the hands of a receiver since March 17, 1921.

BOSTON & MAINE.—*Asks Authority for Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to enter into an agreement for the issuance of $1,815,000 of equipment trust certificates, the proceeds of which, together with a government loan of $1,212,500, are proposed to be used to acquire equipment to the amount of $3,049,700. It is proposed to offer the certificates to several banks in Boston who have expressed a desire to bid on them and to sell them on the basis of not less than 6½ per cent.

BUFFALO, ROCHESTER & PITTSBURGH.—*Merger Report Denied.*—President William T. Noonan has issued a statement denying the report that his road would be included in a merger of the Western Maryland, the Wheeling & Lake Erie, and the Toledo, St. Louis & Western.

CANADIAN NATIONAL RAILWAYS.—*Annual Report.*—The annual report issued this week contains a combined income account for the year ended December 31, 1921, as follows:

	1921	1920
Gross Operating Revenue		
Canadian Northern	$69,088,474	$66,695,399
Canadian Government Railways	40,964,304	44,537,804
Grand Trunk Pacific	16,638,678	14,408,550
Canadian National Railways	$126,691,456	$125,641,752
Operating Expenses		
Canadian Northern	$75,564,385	$82,953,979
Canadian Government Railways	46,551,603	54,987,680
Grand Trunk Pacific	20,668,370	24,543,064
Canadian National Railways	$142,784,357	$162,484,722
Net Deficit from Railway Operations		
Canadian Northern	$6,475,911	$16,258,580
Canadian Government Railways	5,587,299	10,449,876
Grand Trunk Pacific	4,029,692	10,134,514
Canadian National Railways	$16,092,902	$36,842,970
Tax Accruals		
Canadian Northern	$1,191,891	$1,185,652
Canadian Government Railways	35,744	61
Grand Trunk Pacific	357,395	45,409
Canadian National Railways	$1,585,029	$1,231,122
Total Operating Deficit		
Canadian Northern	$7,667,802	$17,444,232
Canadian Government Railways	5,623,043	10,449,937
Grand Trunk Pacific	4,387,086	10,179,923
Canadian National Railways	$17,677,931	$38,074,092
Non-Operating Income		
Canadian Northern	$3,119,350	$1,845,995
Canadian Government Railways	457,352	1,737,979
Grand Trunk Pacific	863,186	1,837,442
Canadian National Railways	$4,439,888	$5,421,415
Deductions from Gross Income		
Canadian Northern	$1,011,242	$125,637
Canadian Government Railways	845,066	720,096
Grand Trunk Pacific	801,668	812,405
Canadian National Railways	$2,657,976	$1,658,138
Total Deficit Before Fixed Charges		
Canadian Northern	$5,559,694	$15,723,875
Canadian Government Railways	6,010,756	9,432,055
Grand Trunk Pacific	4,325,568	9,154.886
Canadian National Railways	$15,896,019	$34,310,816
Fixed Charges		
Canadian Northern Railway System—		
Interest due public	$17,595,708	$13,993,695
Interest due government	13,224,208	10,326,261
	$30,819,916	$24,319,956
Grand Trunk Pacific Railway—		
Interest due public	$3,977,447	$4,270,244
Interest due government	1,535,474	1,539,224
Interest on receiver's certificates	1,702,887	808,352
Interest due Grand Trunk Railway	2,742,192	2,256,468
	$9,958,000	$8,874,288
Canadian National Railways	$40,777,916	$33,194,244
Total Deficit		
Canadian Northern Railway System	$36,379,610	$40,043,831
Canadian Government Railways	6,010,756	9,432,055
Grand Trunk Pacific Railway	14,283,568	18,029,174
Canadian National Railways	$56,673,934	$67,505,060
St. John and Quebec Railway (leased)	316,045	346,015
	$56,989,979	$67,851,075
Operating Ratios		
Canadian Northern	109.37	124.38
Canadian Government Railways	113.64	123.46
Grand Trunk Pacific	124.21	170.34
Total	112.70	129.32

CENTRAL VERMONT.—*Authorized to Issue Equipment Notes.*—The Interstate Commerce Commission has authorized an issue of $754,000 of equipment notes.

CHICAGO, MILWAUKEE & ST. PAUL.—*Asks Authority for Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume liability in connection with $8,085,000 of 5 per cent equipment trust certificates for the purchase of 6,500 freight cars and 25 locomotives. The certificates have already been offered for sale by White, Weld & Co.

CHICAGO UNION STATION COMPANY.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $6,150,000 of first mortgage 5 per cent bonds to be sold at not less than 97 and the proceeds used for construction purposes. The proprietary companies were also authorized to guarantee the bonds.

CINCINNATI, INDIANAPOLIS & WESTERN.—*Asks Authority to Sell Bonds.*—This company has applied to the Interstate Commerce Commission for authority to sell $1,000,000 of first mortgage 5 per cent, 50-year, gold bonds at not less than 70. The company has also applied to the Interstate Commerce Commission for a certificate authorizing the acquisition and operation of that part of the Chicago & Indiana Coal Railroad extending from Brazil, Ind., 25.76 miles, to a connection with the Cincinnati, Indianapolis & Western in Parke County, Ind.

GREAT NORTHERN.—*Certificate for Abandonment Denied.*—The Interstate Commerce Commission has denied this company's application for authority to abandon 3.69 miles of its Portland branch in Traill county, N. D., on the ground that the saving to be effected would be relatively small and that the towns served would be placed at a disadvantage.

KANSAS CITY, MEXICO & ORIENT.—*Guaranty Certified.*—The Interstate Commerce Commission has issued a final certificate stating the amount of this company's guaranty for the six months' period of federal control as $478,904, of which $38,904 was still to be paid. For the Kansas City, Mexico & Orient of Texas the commission certified the amount of the guaranty as $554,715, of which $84,715 was to be paid.

LAKE ERIE & WESTERN.—*Authorized to Issue Notes.*—This company has been authorized by the Interstate Commerce Commission to issue $1,300,000 of 6 per cent promissory notes for the purpose of refunding indebtedness.

MAGMA ARIZONA.—*Asks Authority to Issue Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue at par $800,000 of capital stock to provide funds for changing the road from narrow to broad gage, improving the grade and providing equipment.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Dividend Case.*—Federal Judge W. F. Booth, at Minneapolis, Minn., has decided that the common stockholders are entitled to the 2 per cent. semi-annual dividend declared March 13, to be paid out of an undivided surplus accumulated between 1909 and 1919.

Equal dividends of 2 per cent. on the common and preferred stocks were declared March 13, though the preferred stock had a 7 per cent. preference as to dividends declared out of any one year's earnings. The Continental Insurance and Fidelity Phoenix Insurance companies, large holders of preferred stock, brought suit enjoining payment of the 2 per cent. on the common stock, claiming that the preferred stockholders must be paid at the full annual rate of 7 per cent. before the common stock participated in the earnings.

MISSOURI, KANSAS & TEXAS.—*Asks Dissolution of Receivership.*—A decree was filed in the federal court at St. Louis, Mo., on June 28, by the bondholders and other interested parties for the dissolution of the road's receivership.

Objection was entered by the Kansas City Terminal Railroad Association and nine constituent railroads to one provision in the decree—the plan for the withdrawal of the Missouri, Kansas & Texas from the use of the Kansas City Union Station and establishment of its own station.

The decree held that the interests of the road and its creditors could be served best by dissolving the receivership and selling the assets. It pointed out, however, that operation under the receiver had been successful. The decree asks that the sale be held in the M., K. & T. station at Colbert, Okla.

Belief was expressed that the financial interests now controlling the road would bid it in at an auction sale.

An outline of the reorganization plan was published in the *Railway Age* of November 26, 1921, page 1043.

NORFOLK & PORTSMOUTH BELT.—*Asks Authority to Sell Bonds.*—This company has applied to the Interstate Commerce Commission for authority to have certified and delivered by the Fidelity Trust Company of Philadelphia $150,000 of 5 per cent gold bonds and to sell them at not less than 85, the proceeds to be used to pay off some notes.

TEXAS & PACIFIC.—*Annual Report.*—The annual report issued this week shows the following income account for the year ended December 31, 1921:

	1921	1920
Operating revenues	$35,600,474	$41,844,190
Operating expenses	28,424,905	37,459,040
Net revenue from railway operations	7,175,569	4,385,150
Tax accruals	1,437,974	1,337,259
Railway operating income	5,727,387	3,039,567
Equipment and joint facility rents—net Dr.	1,181,698	1,565,440
Net railway operating income	4,545,689	1,474,127
Non-operating income	341,322	3,316,283
Gross income	4,887,011	4,790,410
Interest on funded debt	1,792,166	1,729,870
Total deductions from gross income	2,146,287	2,399,578
Net income	2,740,724	2,390,832
Income appropriated for investment in physical property—road	1,925,502	2,241,815
Total appropriations of income	2,422,097	2,989,564
Income balance	318,627	Def. 598,732

Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Lehigh Valley	$4,600,000
Northern Alabama	25,000
Cincinnati, Findlay & Ft. Wayne	18,000

Dividends Declared

Baltimore & Ohio.—Preferred, 2 per cent, semi-annually, payable September 1 to holders of record July 15.

Central Railroad of New Jersey.—2 per cent, quarterly, payable July 15 to holders of record July 5; 2 per cent, quarterly, payable August 15 to holders of record August 3.

Norfolk & Western.—Common, $1.75, quarterly, payable September 19 to holders of record August 31; adjustment preferred, $1.00, payable August 19 to holders of record July 31.

Northern Central.—4 per cent, semi-annually, payable July 15 to holders of record June 30.

Philadelphia & Western.—Preferred, 1¼ per cent, quarterly, payable July 15 to holders of record June 30.

Trend of Railway Stock and Bonds Prices

	June 27	Last Week	Last Year
Average price of 20 representative railway stocks	64.91	64.42	53.14
Average price of 20 representative railway bonds	86.38	85.47	73.08

Railway Officers

Executive

Walter L. Stanley, whose election as vice-president of the Seaboard Air Line was announced in the *Railway Age* of June 17 (page 1513), was born at Wytherville, Va., on May 24, 1871. He was graduated from Emory and Henry College, Emory, Va., and studied law at the University of Virginia. He then practiced law for five years and then entered the service of the legal department of the Norfolk & Western. He went with the Seaboard Air Line on September 1, 1901, and served consecutively as claim agent, claims attorney, assistant to the president, assistant to the federal manager (under the Railroad Administration) and general attorney, in which latter position he was serving at the time of his promotion to the vice-presidency. Mr. Stanley was also a staff officer under the regional director of the Southeastern region. Mr. Stanley's headquarters have been at Atlanta, Ga., since 1916.

Walter L. Stanley

Michael H. Cahill, whose election as vice-president and general manager of the Seaboard Air Line was announced in the *Railway Age* of June 17 (page 1513), was born at Lexington, Ohio, in 1874. He received a high school education and entered railway service in 1891 as a messenger boy for the Baltimore & Ohio. He subsequently served that company as operator and train dispatcher and was then promoted to trainmaster and, later, to assistant superintendent. He was promoted then to division superintendent and served in that capacity on four different divisions. Thereafter he was general superintendent of the Pennsylvania and Maryland districts. With the exception of a short period when he was in the service of the Delaware, Lackawanna & Western, Mr. Cahill served continuously with the Baltimore & Ohio until 1920, when he went to the Seaboard Air Line at Norfolk, Va., as general manager, the position he held at the time of his election to the vice-presidency.

M. H. Cahill

Financial, Legal and Accounting

A. G. Gutheim, manager of public relations of the Car Service Division of the American Railway Association, has resigned to engage in the general practice of law at Washington, D. C., effective on July 1.

Operating

C. A. Braillier has been appointed supervisor of work equipment of the Atchison, Topeka & Sante Fe lines east, with headquarters at Topeka, Kans., effective June 12, to succeed Wm. Barnes, deceased.

Nicholas D. Connelly, whose promotion to superintendent of the Indiana Harbor Belt, with headquarters at Gibson, Ind., was reported in the *Railway Age* of June 17, was born on November 27, 1884 at Jackson, Mich., and entered railway service on August 18, 1899 as messenger boy in the telegraph department and the office of the trainmaster of the Michigan Central at Jackson Junction, Mich. He continued as messenger boy at this point and later in the offices of the chief train dispatcher and the division superintendent at Jackson, Mich., and thereafter as a telegraph operator at various points of the Michigan Central until December 14, 1905, when he was transferred to the Indiana Harbor Belt as a train dispatcher. Consecutively thereafter, he served as train dispatcher, switchman, conductor and yardmaster on the Indiana Harbor Belt, until 1912 when he was promoted to general yardmaster, from which position he was advanced in 1916 to trainmaster, with headquarters at Gibson, Indiana, the position he held at the time of his recent promotion to superintendent.

N. D. Connelly

Traffic

C. J. Faulconer has been appointed district freight agent of the Lake Erie & Western, with headquarters at Pittsburgh, Pa.; A. C. McKinley, district freight agent, with headquarters at Chicago; J. K. Leigh, district freight agent, with headquarters at Minneapolis, Minn.; W. B. Robbins, district freight agent, with headquarters at Detroit, Mich.; D. L. Holtz, district freight agent, with headquarters at St. Louis, Mo., and W. B. McGowan, district freight agent, with headquarters at Kansas City, Mo., all effective June 16. Effective the same date, J. H. McHugh has been appointed division freight and passenger agent at Peoria, Ill., H. C. Fisher, division freight and passenger agent at Sandusky, Ohio, and E. J. Hayler has been appointed commercial agent, with headquarters at Muncie, Ind., and W. A. Angrick, commercial agent, with headquarters at Kokomo, Ind.

Bernard W. Herrman, whose appointment as assistant freight traffic manager of the Norfolk & Western, with headquarters at Roanoke, Va., was announced in the *Railway Age* of June 10, page 1369, was born on October 10, 1866, at Dayton, Ohio. He was educated in the public schools and in 1882 entered the service of the Cleveland, Columbus, Cincinnati & Indianapolis (now C. C. C. & St. L.) and the Scioto Valley (now N. & W.). In 1890 he was promoted to contracting freight agent of the Big Four and the following year entered the service of the Norfolk & Western as traveling freight agent with headquarters at Columbus, Ohio. In 1893 he became local freight agent for the same company at Columbus and the following year entered the employ of the Cleveland, Akron & Columbus (now the Pennsylvania) in a similar capacity. In 1910 he became general agent of the Norfolk & Western at Cincinnati, Ohio, and in 1912 was promoted to assistant general freight agent, with headquarters at Columbus. In 1917 he was promoted to general freight agent with the same headquarters and in 1918 was transferred to Roanoke, Va., in a similar capacity. In this latter position he was serving at the time of his recent promotion.

Engineering, Maintenance of Way and Signaling

Major L. D. Blauvelt, former chief engineer of the Denver & Salt Lake, has resigned as state highway engineer of Colorado to become chief construction engineer for the commission established to construct the six-mile tunnel through the continental divide on the line of the Denver & Salt Lake, west of Denver, Colo.

Purchasing and Stores

R. J. Aul, storekeeper of the Indiana Harbor Belt, with headquarters at Gibson, Indiana, has been appointed to serve also as storekeeper of the Chicago River & Indiana and the Chicago Junction.

Obituary

William C. Arp, retired superintendent of motive power of the Vandalia, died at his home in Terre Haute, Ind., on June 16 at the age of 74 years after having been engaged in railway service for 48 years.

Archibald Stuart Baldwin, vice-president of the Illinois Central in charge of the Chicago terminal improvements and this company's extensive program of electrification in that city, died suddenly on the evening of June 26 on a Michigan Central train approaching Detroit on his return to Chicago after an extended visit in Europe where he attended the International Railway Congress at Rome, Italy, and spent considerable time thereafter studying European electrification systems. Mr. Baldwin was born at Winchester, Va., on September 28, 1861, and entered railway service in 1879 as a rodman on the Richmond & Allegheny, now a part of the Chesapeake & Ohio, a position which he left in 1880 to become assistant engineer of the Iron and Steel Works Association of Virginia. He was employed as assistant engineer and engineer of this company until 1882 when he re-entered railway service as a draftsman on the Philadelphia extension of the Baltimore & Ohio. Advanced a short time later to assistant engineer on this work, he continued in this capacity until 1885 when he became principal assistant engineer on the construction of the Missouri river bridge of the Chicago, Milwaukee & St. Paul at Kansas City, Mo., a position he occupied until 1886. Consecutively thereafter he was resident engineer of the Louisville, St. Louis & Texas from 1886 to 1887, assistant engineer on the Louisville & Nashville from 1887 to 1889 and roadmaster until December, 1901, when he entered the service of the Illinois Central as principal assistant engineer. He was advanced to engineer of construction on May 1, 1903, was promoted to chief engineer on March 20, 1905, and on August 1, 1918, was elected vice-president of the corporation, a position he held until March 1, 1920, when he was appointed vice-president in charge of the Chicago terminal improvements. Mr. Baldwin has been active in engineering associations for many years, having been president of the American Railway Engineering Association during 1916-1917 and president of the Western Society of Engineers during 1919-1920. At the time of his death he was the selection of the Illinois Section of the American Society of Civil Engineers for director.

A. S. Baldwin

One Hundred Carloads of Potatoes all destined for New England, left Cape Charles, Va., by the Pennsylvania Railroad, on June 16.